No. 4256

IN THE

United States Circuit Court of Appeals

For the Ninth Circuit

WILLIAM R. RAY and W. S. RAY MANUFACTURING COMPANY (a corporation), *Appellants and Cross-Appellees,* vs. BUNTING IRON WORKS (a corporation), *Appellee and Cross-Appellant.*	On Ray Rotary Oil Burner Patents No. 1,193,819 No. 1,285,376

BRIEF FOR PLAINTIFFS-APPELLANTS.

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BRIEF FOR PLAINTIFFS-APPELLANTS.

Statement.

Plaintiffs brought suit on February 7th, 1922, in the Court below for infringement of two patents for Rotary Oil Burners issued to plaintiff Wm. R. Ray; being patent numbers 1,193,819, of August 8, 1916, and 1,285,376, of November 19th, 1918, filed, respectively, on November 30th, 1914, and May 8th, 1916. The plaintiff corporation is the exclusive licensee under the Ray patents.

Defendant charged by way of alleged counterclaim infringement by plaintiffs of the King patent

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(For the convenience of the Court a complete index of plaintiffs' and defendant's exhibits appears in the index to this brief, the page references for the exhibits referring to the *printed record.*)

No. 1,158,058, issued October 26, 1915, filed March 23rd, 1914.

The case was tried before Judge Bourquin on the 12th and 13th days of March, 1924. In an opinion rendered March 27th, 1924, appearing at pages 207 and 210 of the printed record on appeal, he declared the Ray patents invalid and dismissed the bill. The counterclaim he likewise dismissed with this brief comment (R. 210):

> "In respect to defendant's patent, little has been said for or against it. It seems to be set out more as a counter-irritant, and the actual instrumentality is not in evidence. Whatever its merits, wherein complainant has infringed, if at all, is not particularized. Whether valid or not, the evidence does not prove infringement. And that only is the decision of the Court."

Both parties appealed. For convenience we shall refer to them as "Plaintiffs" and "Defendant".

Plaintiffs' burner is known as the "Ray" burner; defendant's burner as the "Simplex" burner. A specimen of each burner is in evidence; the "Ray" as "Plaintiffs' Exhibit 7" and the "Simplex" as "Plaintiffs' Exhibit 1". The two are practically identical in every way, one having been obviously copied from the other.

Opposite is a sheet on which appears cuts (Plates I and II) of plaintiffs' and defendant's commercial burners.

—SHUT DOWN

—IN OPERATION

60, 80, 125, 175
Lined I

Both devices (plaintiff's and defendant's infringing Simplex) while employing the rotary principle of projection and atomization of the oil in a horizontal direction, *produced solely by reason of the patented combination,* are able to produce a column-like body of vapor which, when ignited and supplied with additional air for combustion, has an elongated intense flame entirely comparable in effect, appearance and efficiency to that produced by the so-called straight-shot or tube burners employing steam for atomization, but *at a great saving in oil,* together with other benefits achieved, over the use of the latter type of burner.

Infringement is charged particularly of claims 3, 4, 7, 8, 9, 10, 11 and 12 of Ray patent No. 1,193,819 (called for convenience the "First Ray Patent") and claims 1 to 6 and 14 to 20, inclusive, of Ray patent No. 1,285,376 (called the "Second Ray Patent").

THE DEFENSES.

The defenses to the Ray patents, as stated (R. 767) were aggregation, want of invention, anticipation, prior invention and use.

The "prior invention" defense consisted of the testimony of the witnesses King and Becker to the making of a rough drawing and a crude experimental apparatus in 1911. Suffice to say for the present that, aside from the fact that both the draw-

ing and the model failed not only to show the patented combination but that they lacked the Ray principle, they were conclusively established as indicating nothing more than an abandoned experiment.

King and Becker both had been actively connected for several years with defendant's predecessors in interest, first as The American Heat & Power Co. and later as The American Standard Oil Burner Co. They had each taken out or applied for various patents on Oil Burners between 1911 and 1914, when the Ray burner came into the field; but none of which patents remotely suggested either the idea of the King 1911 drawing or the later Ray type of burner.

During all this period, that is, up to the fall of 1915, the defendant's predecessors and King and Becker were actively engaged in marketing oil burning apparatus of an entirely different character and principle from that of Ray. It was not until the time of the Panama-Pacific International Exposition in San Francisco in 1915, when and where the phenomenal success of the Ray burner asserted itself, that the defendant's predecessors, and particularly King and Becker, abandoned all their then commercial types of oil burners, bought a Ray Horizontal Rotary Burner, copied it and put it on the market under their own sign and trade name of "Simplex".

There has never been any denial of infringement. In fact, the imitation is so close that if the Ray patents, and either of them, are, or is, valid, infringement follows as a matter of course.

If the defendant contends that it, through its predecessors, was the first to get up a horizontal, rotary crude oil burner, such defense may be dismissed as without merit. Even if it is true that the defendant's predecessors, through their employees, actually made a drawing or even an experimental device of the rotary oil burner as early as 1911 or 1912, such work at best was merely an abandoned experiment.

Failing in showing anticipation by any so-called prior use or prior invention, and failing any anticipating patent as such, the defendant was thrown back on the time-worn defense of all infringers that the Ray patents lacked novelty and invention because most, though admittedly not all, of the elements of the Ray patented combinations were to be found here and there individually among some thirty odd prior patents; even though it was conclusively shown that many of these prior art patents were inoperative or impractical and worked on a different principle from the Ray system of burning oil and although defendant in getting up its burner did not follow the prior art but copied the Ray.

The learned Trial Judge, in accepting the defense of want of invention, conceded that the prior art *did not* disclose as a matter of fact *all* the elements, even considered singly, of the patented combinations, thus (R. 209):

> "The patents pleaded in defense and in evidence disclose every element and incident of complainant's, *save the partition diaphragm or baffle in the fan casing*. If this latter serves any purpose, it does not appear, nor any that the side casing of the fan blades will not serve. Hence, to insert this partition involves no invention." (Italics ours.)

But even if the prior art had shown *all* the elements, the Supreme Court said in Leeds & Catlin Co. v. Victor, 213 U. S. 301; 53 L. Ed. 805, 813:

> "A combination is a union of elements, which may be partly old and partly new, or wholly old or wholly new. But, whether new or old, the combination is a means—an invention—distinct from them. They, if new, may be inventions and the proper subjects of patents, or they may be covered by claims in the same patent with the combination.
>
> "But whether put in the same patent with the combination or made the subjects of separate patents, they are not identical with the combination. To become that they must be united under the same co-operative law. Certainly, one element is not the combination, nor, in any proper sense, can it be regarded as a substantive part of the invention represented by the combination, and it can make no difference whether the element was always free or becomes free by the expiration of a prior patent foreign or domestic. In making a combination,

> an inventor has the whole field of mechanics to draw from. This view is in accordance with the principles of the patent laws."

And, again, in the Diamond Tire Case, 220 U. S. 428; 55 L. Ed. 527, citing the Leeds Case, supra:

> "And we may say, in passing, the elements of a combination may be all old. In making a combination the inventor has the whole field of mechanics to draw from."

While the learned Trial Judge's statement construed as an expression of the rule applying to combinations is contrary to the rule above expressed by the Supreme Court, nevertheless it will be proper and becomes our duty to point out the co-operative law under which the various elements of the Ray combinations function and to show some of the advantages of this diaphragm or baffle in contributing directly to the desired accomplishments of both plaintiffs' and defendant's burners.

The situation recalls the apt words of Judge Coxe in United Shirt & Collar Co. v. Beattie, 149 Fed. 736, 739, 740 (C. C. A. 2nd Circuit):

> "If Pine did nothing more than take an old abandoned failure and, by the introduction of new and ingenious features, no matter how simple they may be, convert the rusty relic into a living machine which does the required work better, faster, cheaper than it was ever done before, he is entitled to the protection which his patent is intended to give. Potts & Co. v. Creager, 155 U. S. 597, 15 Sup. Ct. 194, 39 L. Ed. 275; Clough v. Barker, 106 U. S. 166, 1

> Sup. Ct. 188, 27 L. Ed. 134. Pine seems to have added to the prior devices the one feature necessary to make the machine a marked commercial success."

As far as the plaintiffs' patented burners are concerned it is shown by the evidence that plaintiffs from a small beginning of five burners in 1914 and with limited capital the sales of Ray burners has gradually grown from 55 burners in 1915 of a value of a little over $6000 to a total of nearly 3000 burners (2982 to be exact) in 1923, representing a value of over $465,000; or a total sale of burners for nine years, inclusive, of 7566 burners which sold for $1,178,318.98 (R. 182).

As to the extent of plaintiffs' business Mr. Ray says (R. 184):

> "* * * we are selling them all over the world at the present time, and have our own branch in Chicago, and in Oakland, and here. The rest of the distributors are financed by themselves. We have distributors in every large city in the United States, in Mexico, Alaska, Hawaiian Islands, and in England, France and Norway."
>
> * * * * * * *
>
> "We publish catalogs in Spanish and in French."

The record does not disclose the extent of defendant's business in the infringing burner, but considering the length of time it and its predecessors have been in this business and their greater financial means at all times than plaintiffs', it is obvious

PLATE III

W. R. RAY.

OIL BURNER.

APPLICATION FILED NOV. 30, 1914.

1,193,819.

Patented Aug. 8, 1916.

2 SHEETS—SHEET 1.

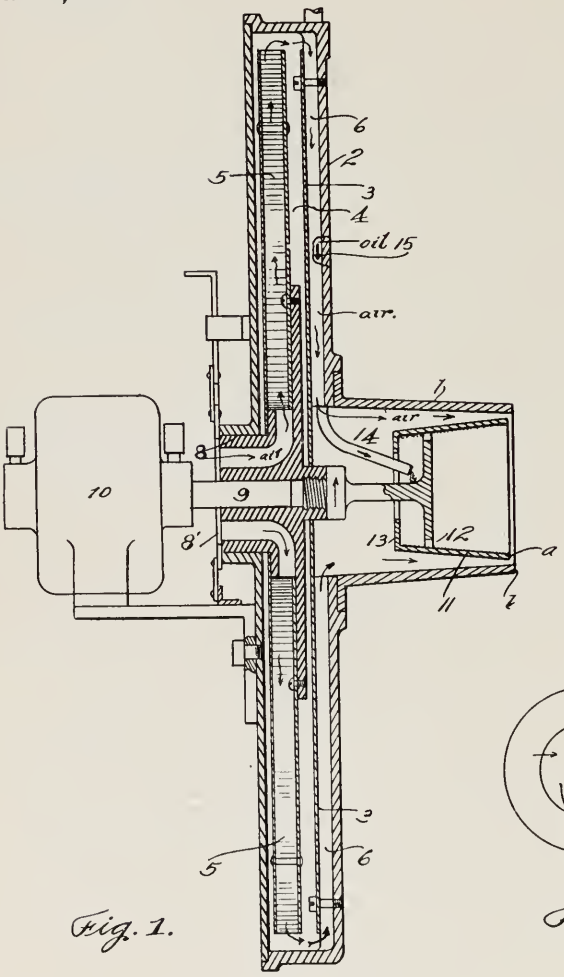


Fig. 1.

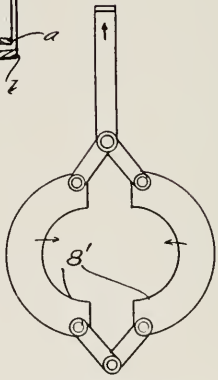


Fig. 2.

WITNESSES:

F. E. Maynard

Jarvis Sinnett.

INVENTOR

William R. Ray

BY C. H. Strong.

ATTORNEY

that defendant's business success with the infringing burner has at least been equal to that shown by plaintiffs.

ASSIGNMENT OF ERRORS.

Briefly, plaintiffs assign as errors of the Trial Court on this appeal (R. 214-215):

(1) In dismissing plaintiffs' bill with respect to the two Ray patents in suit and each of them.

(2) In finding invalidity of each patent for alleged lack of novelty and invention.

(3) In failing to hold said patents, and each of them, valid and infringed.

(4) In not awarding costs to plaintiffs.

THE RAY PATENTS.

The Ray patents (see Plate III opposite of first patent) relate particularly to a horizontal rotary oil burner of the fan type, in which the fan (5) is characterized as of relatively large diameter with respect to the oil distributing cup (11); the fan having very narrow blades adapted to create a *high velocity* air current of *small volume* at the fan periphery; in connection with a deflecting diaphragm (3) so disposed as to conduct the air discharge from the fan (5) at undiminished velocity and pressure to a horizontally extending air nozzle (7), within which is the rotary distributing oil cup

(11); the whole so constructed, arranged and operated that a *minimum quantity of air at maximum velocity just sufficient for atomization but insufficient for combustion,* will be set in motion by the fan and distributed around the oil cup and in axial line therewith to effect an atomization of the oil and project it in the form of a shaft or column of inflammable vapor of comparatively small diameter. The shaft-like column of vapor, when ignited, produces a long narrow flame capable of projecting horizontally into a fire-box and under a boiler, much after the fashion of the so-called straight-shot, steam-pressure burners, but possessing many advantages over the latter and over other more or less obsolete types of apparatus.

The first Ray patent seeks to cover the combination broadly.

The second Ray patent (plate IV opposite) embodies improvements particularly in the control and management of the oil supply and return of excess to the source of supply.

As far as the evidence shows Ray was the first to develop and perfect and put into commercial operation a burner of this type. Its success has been no less than phenomenal—so much so that the defendant was prompted, for reasons best known to itself, to change from the so-called vertical type of apparatus, which it had been developing and promoting over a considerable period of years, to what was

PLATE IV

W. R. RAY.

OIL BURNER.

APPLICATION FILED MAY 8, 1916.

1,285,376.

Patented Nov. 19, 1918.

3 SHEETS—SHEET 2.

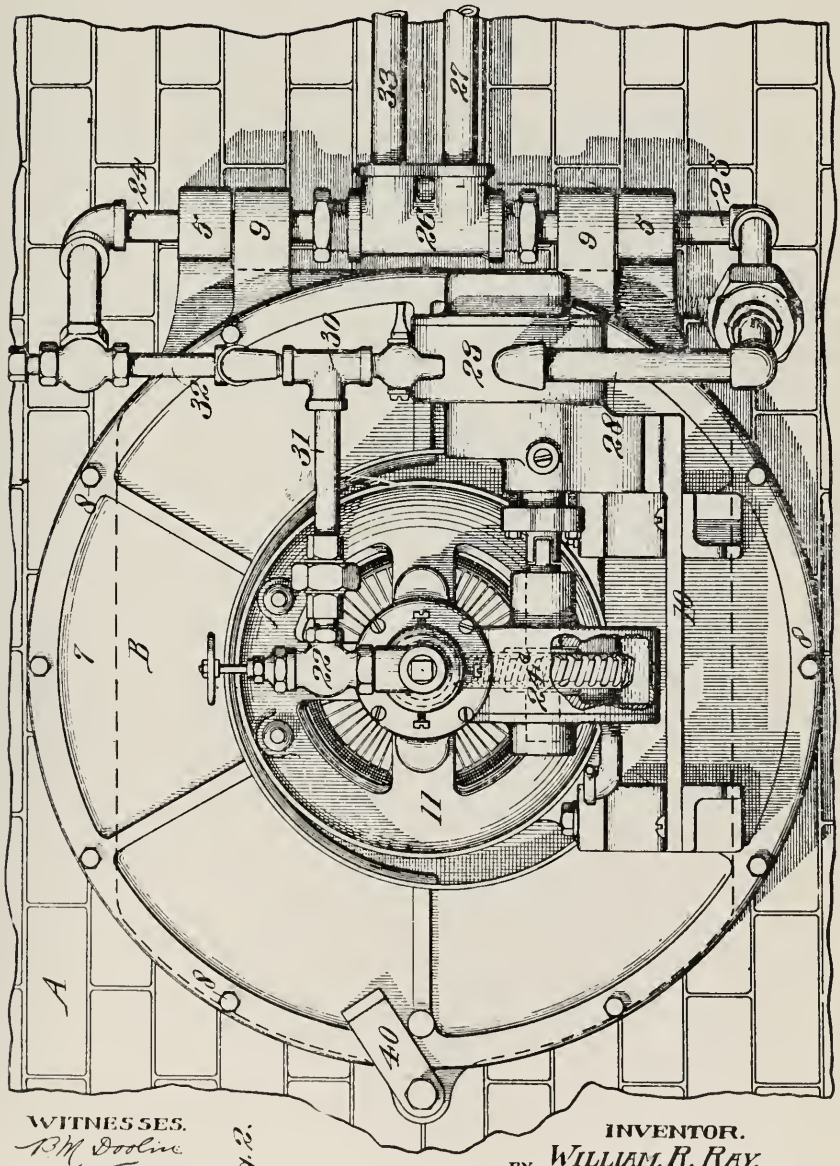


Fig. 2.

WITNESSES.

P. M. Dooling

L. J. Forde

INVENTOR.

BY WILLIAM R. RAY.

Strong & Townsend

ATTORNEYS.

practically a Chinese copy of the plaintiffs' horizontal type of burner.

In this connection we are reminded that utility and patentability are often established by defendant's tribute of imitation.

> "The questions mainly argued relate to whether or not invention is present, particularly in view of the prior art. That utility is present, it is said, is shown by the prima facie presumption resulting from the issue of the patent and from substantial sales and use. The evidence tends to show that 1,000 a month are being made and sold. Whether these sales are evidence of utility in the device, or senility, or some form of arrested mental development in the buyer, may well be open to question. The defendant, however, has made a substantial copy of this device, and is not, therefore, in a position to deny its patentable utility; and for this reason, coupled with the prima facie presumption, it must be held that the patent is not void for want of utility. See Faultless Rubber Co. v. Star Rubber Co. (6 C. C. A.), 202 Fed. 927, 930, 121 C. C. A. 285; Diamond Rubber Co. v. Consolidated Tire Co., 220 U. S. 428, 440, 31 Sup. Ct. 444, 55 L. Ed. 527." (*Vaco Grip Co. v. Sandy MacGregor Co.,* 292 Fed. 249, 251.)

One outstanding feature of novelty of the first Ray patent resides in the production for the first time of a horizontal, straight-shot flame in a motor-driven type of oil burner.

Ray's second patent represents a further advance in rotary oil burners, being for means which will permit a burner of this type not only to be mounted

upon the furnace and swing about after the fashion of a door but utilizing the fan casing to form the closure for the opening in the furnace wall in conjunction with an air nozzle forming an air jacket for the oil cup and the provision of means to return the excess oil to the source of supply. These features are all carried in exact detail into the defendant's infringing burners.

The Ray Burner (and the defendant's Simplex as well) in its essentials delivers a circular envelope of air of small diameter and of extremely high velocity into a furnace. Within this envelope of high velocity air there is delivered from a rapid atomizing revolving cup a quantity of mechanically atomized fuel oil. This atomized oil is thrown into, but not through this envelope of high velocity air and is thoroughly mixed with it. The direction of the mixture of air and oil is such, that it is carried into the furnace without coming in contact with the walls or any other surfaces; combustion being completed before any of the atomized oil touches any of the above surfaces.

It is essential in the operation of burners of this type that the envelope of high velocity air discharged from the air nozzle be of extremely high velocity and be restricted to small diameter around the atomizing cup. In the Ray & Simplex burners air is delivered to the air nozzle from a fan of large diameter and small cross section mounted on the motor shaft which also carries the small oil-distributing cup.

FIRST RAY PATENT 1,193,819, DATED AUGUST 8th, 1916, (APPLICATION FILED NOVEMBER 30th, 1914).

Ray says in his specifications to patent No. 1,193,-819 (application filed November 30th, 1914), beginning page 1, line 12:

> "It is an object of this invention to provide in one complete unit a rotary atomizer, an air pump and a motor with but one moving component; and particularly to provide an oil burner whereby a quantity of crude oil is atomized and then *directed in a substantially lineal o· axial direction;* and to provide a centrifugally acting nozzle and means for discharging a blast of air at an angle to the discharge from the nozzle so as to catch the spray and *carry it in a slightly flaring manner to produce a long blast.*
>
> "Another object is to provide an oil burner as free from friction as possible and thus being economical in the consumption of power per hour per gallon of oil consumed." (Italics ours.)

"Freedom of friction" is largely effected by the use of the direction diaphragm or baffle 3 in conjunction with the fan 5 of relatively large diameter with respect to the oil cup 11, and having narrow blades whereby the fan (rotor 5 as it is sometimes called in the patent)

> "discharges a blast of air in a *thin annular stream* * * * around the circumference of the oil nozzle 11. The oil in the rotating cup advances to its edge *a* and is thrown centrifugally against the surrounding stream of air moving at a right angle to the edge of the cup and hence across the oil spray. Thus the oil is

picked up by the air and carried into the *furnace in a flame which is slightly divergent* as it *leaves the nozzle.* This produces *a column or pillar of fire axial with the burner"* (lines 78-90, page 1, Ray patent.) (Italics ours.)

Continuing the patentee says (lines 91-100):

"This burner is of low construction and operating cost, has but one moving element with only two bearings, each part is simple and replaceable at small expense, is easy to maintain and keep clean, is very compact and forms a complete power and burner unit, the life of which is practically unlimited; the only parts subject to heat action being the mouthpiece and the cup nozzle."

AXIAL COLUMNAR FORM OF FLAME FURTHER EMPHASIZED.

In conclusion the patentee says (page 1, lines 101 to 108):

"By providing a fan or runner 5 of a diameter relatively large as to that of the spray nozzle 11, a *pressure of air is attained at the mouthpiece which is not only effective to atomize the oil,* but also forces the combustible mixture in an *axial direction* in front of the burner and in a slightly conical form." (Italics ours.)

The importance of this is that in *all* cases in the prior art attempting to use the rotary principle, the patentees had produced always a more or less *saucer-shaped* or disk-like flame, and depended on a *com-*

paratively large flared *oil cup* to *atomize the oil* by CENTRIFUGAL force; and employed so-called *propulsion* types of fans to produce a *large volume* of air at *low pressure* and *low velocity* to effect *combustion.*

In other words, earlier inventors got atomization by *centrifugal* action and necessarily got a different character of flame from Ray and from Simplex. Ray and Simplex get atomization by high velocity air and a *small* oil distributing cup which latter in itself produces no substantial centrifugal counter effect to the air envelope.

FILE WRAPPER OF PATENT NO. 1,193,819.

References:

Fesler	1,026,663—May 21, 1912,
Becker	1,101,779—June 30, 1914,
Fesler	1,113,108—Oct. 6, 1914,
Landsee	100,268—May 1, 1870,
Klein	473,759—Apr. 26, 1892,
Mack	548,647—Oct 29, 1895,
Morin	1,025,153—May 7, 1912,
Eddy	540,650—June 11, 1895,
Britten	1,022,122—Apr. 2, 1912.

The patent application as originally filed by Ray contained twelve claims, all of which were practically directed to claiming broadly a rotary oil

burner employing a motor and a motor shaft and a distributing cup on the motor shaft.

The claims, however, as finally allowed to Ray clearly differentiate from anything in the prior art and embrace and cover what experience has shown to be the practical requirements of a successful horizontal rotary burner.

An analysis of the Ray File Wrapper will give a practical answer not only to all the patents cited by the Examiner but to everything else that this defendant has been able to bring forward in an attempt to anticipate the Ray invention.

This is one of those unusual cases where the actions in the Patent Office show unusual alertness on the part of the Government experts in considering the patent application before allowing it to go to issue, with the consequence that the presumption of novelty accorded to every patent is greatly strengthened in the case of Ray.

> "It is evident that the patent in suit, as finally granted, had a long, hard row to travel, as is disclosed by the proceedings in the Patent Office and the length of time that elapsed between the filing of the application and the granting of the patent. The patent is presumed to be valid, and to my mind this presumption is strengthened by the consideration given the case in the Patent Office before the patent was granted." (United Shirt & Collar Co. v. Beatie, 138 Fed. 136-137; affirmed C. C. A. 149 Fed. 736.)

To the same effect spoke Judge Bradford in Brill v. North Jersey St. Ry. Co., 124 Fed. 778, 780:

> "The truck mechanism of patent No. 627,898 has not only materially added to the ease, convenience, speed and safety of travel, but has proved economical. It has commanded a large sale and met with much success. There is, further, the presumption of validity arising from the grant of the patent. This presumption is entitled to much force here; for the application and claims were subject to much controversy and received careful and prolonged consideration in the Patent Office."

SECOND RAY PATENT, NO. 1,285,376, DATED NOVEMBER 19TH, 1918 (APPLICATION FILED MAY 8TH, 1916). (SEE PLATE IV SUPRA.)

The claims infringed are 1 to 6, inclusive, and 14 to 20, inclusive, and relate to the mounting of the burner and fan casing on the furnace front.

Ray has no furnace door as such, but has so constructed and arranged his fan casing that it acts for a closure for the small opening that is required in the furnace front. Furthermore, the furnace front opening is not really a door opening but is merely a burner opening, and in reducing it to its smallest dimensions and proportioning this opening to the burner requirements, Ray uses an air-nozzle plate (3) with a conical projection (4) which projects into the opening in the furnace front to form a metallic lining for the same. Also the fan casing is hingedly mounted on this air-

nozzle plate (3); the *fan casing* and air-nozzle plate forming a unitary compact structure. The conical projection of plate (3) likewise cooperates with the burner, when in position, *to form an air jacket to protect the burner nozzle and burner* and to admit a certain amount of air for combustion purposes, in addition to that supplied by the fan blower.

We thus see a true combination existing between the air-nozzle plate (3), with its conical or hollow tapered extension (4) and the fan casing and burner.

The patentee says that this invention represents an improvement over his prior patent No. 1,193,819, supra, and that his object is (page 1, lines 12 to 23):

> "to provide a burner having a rotary atomizer and fan, both of special construction, mounted directly on the motor shaft, the whole supported upon a swinging plate forming a part of the fan casing to allow the burner to be swung outwardly for inspection, or inwardly against the furnace front so that the burner tip may project within the combustion chamber; the fan casing and burner being mounted entirely distinct from the ordinary furnace door."

This patent, like the first one, shows the large diameter, narrow blade fan (13), diaphragm (18) in the fan casing (6) and oil distributing cup (14); the only difference being that the oil is delivered centrally through the shaft (12) instead of by an external oil pipe as in the first patent.

Defendant admits, R. 108-9, that there is no difference in the species of oil cup shown in the first

Ray patent where the oil is fed through a separate oil pipe eccentric to the motor shaft and the species shown in the second Ray patent and in the respective commercial devices of the plaintiff and defendant.

The patentee recognizes the necessity for the large diameter thin-bladed, high-speed fan and diaphragm, here, as in the first patent, and shows that while the diaphragm performed by itself an important function not only in directing and thinning the air current to the oil cup, nevertheless something was still left to be desired so the air nozzle *vanes* were introduced. While the defendant itself has not used the air vanes as far as known and so does not infringe the air vane claims, it has infringed numerous other claims which omit the air vanes.

The patentee says (page 1, lines 68-77):

> "Secured interiorly of the housing 6 is a circular plate 18 of lesser diameter which divides the interior of the housing into two compartments, 19 and 20. The compartment 19 contains the fan 13 while the compartment 20 serves as an air passage, which receives the air discharging from the periphery of the fan and then deflects it down to the central discharge chamber 16 and connected nozzle 17."

Continuing the patentee says (page 1, lines 99-108):

> "As here shown the fan and fan casing are of relatively large diameter with respect to their width. In other words, I use a very thin

> fan and casing giving high velocity and large volume of air and the air traveling to the nozzle in a relatively thin sheet and discharged into chamber 16; the air currents thence being straightened out by the vanes 17[a] to produce the desired straight shot effect of the flame."

(The patentee is in evident error in referring to the quantity of air delivered by this fan as of "large" volume. As shown by the testimony of all the witnesses on the subject, this fan, is a high velocity, *small* volume *centrifugal* fan as distinguished from the large volume "propulsion type" of fan of the prior art.) (See Whaley R. 199-201.)

Coming now to the subject-matter of the claims in suit in this patent, particularly as concerns the oil supply and oil return, the patentee says (page 1, line 109 to page 2, line 34):

> "The burner here shown is particularly designed to handle low gravity fuel oils and this oil is delivered to cup 14 in the following manner: Extending through the hollow shaft 12 of the motor is a stationary pipe 21 which opens into the atomizing cup 14 at one end and is connected at the opposite end with a controlling valve 22. The oil is delivered to the valve 22 and the connected stationary pipe 21 by means of a pump 23 of suitable construction, which is driven directly from the motor shaft at a reduced speed by means of the worm gear drive indicated at 24[a]. Extending through the hinge lugs 5 and 9 are hollow pintle members 24 and 25, the inner ends of which are connected with a centrally divided double T fitting indicated at 26. Oil from any suitable source of supply enters the lower half of the

double T through a pipe 27 and then passes down through the hollow pintle 25 which is connected with the pump 23 by means of a pipe 28. The oil impelled by the pump is then discharged through a pipe 29 which enters an angle T indicated at 30. The major part of the oil is here directed through a pipe 31 to the valve 22 with connected stationary pipe 21 which finally delivers the oil to the atomizing cup 14, while any surplus amount delivered by the pump is by-passed through pipe 32 which connects with the upper hollow pintle 24, which as before stated, connects with the upper side of the double T 26. It then passes out through the pipe 33 which connects with the source of supply and therefore serves as a return or over-flow for any surplus amount of oil delivered by the pump 23."

The patentee then shows the advantage of this construction and of his furnace plate 3 (page 2, lines 54 to 115):

"The delivery of oil to the cup is automatically attended to as the pump 23 is directly connected with the motor and will therefore start the flow of oil to the cup the moment the motor begins to operate. The volume of oil delivered being regulated by means of the valve 22 while any surplus amount will over-flow and return to the source of supply through pipes 32 and 33. The whole burner unit, constructed and mounted as here shown, makes a compact practical unit supported upon hinges; these permit the burner, as a whole, to be swung outwardly for inspection or inwardly against the furnace front so that the burner tip, that is, the atomizing cup 14, with surrounding nozzle 17, may project within the combustion chamber; the burner as a whole being locked against

movement in this position by means of a turning latch 40. An ordinary furnace door is in this manner entirely obviated as the fan housing indicated at 6 will form a closure for the furnace opening 2. The provision of the hollow pintles 24 and 25 is also an important feature of the present invention as it permits the burner, as a whole, to be swung into and out of the furnace opening without disturbing the oil supply or overflow connections or any of the valves controlling or regulating the flow of the oil.

"A decided advantage gained by hinging the burner structure, as a whole, to the front plate of the furnace is obtained for the following reason: After the burner has been firing a furnace, it must be remembered that the brick lining absorbs a great portion of the heat and becomes glowing red. This heat glows and reflects back upon the centrifugal atomizing cup, after the oil and air is turned off, and would cause it to become so hot as to anneal or warp unless removed from the furnace opening, and would also cause any remaining oil in the atomizing cup to become carbonized and hardened. Previous to the provision of the hinged structure here shown, applicant found it necessary to keep the motor and fan running for at least fifteen minutes after the oil was turned off for the purpose of cooling down the furnace to such an extent that the stored heat would not warp or destroy the atomizer. This difficulty has, however, been overcome by the present structure as the burner as a whole, may be swung about the hinges to assume a position exterior of the furnace where it is not affected by the furnace heat. The furnace may in this manner, retain its heat for a considerable time and the boiler or other device heated by the furnace is similarly prevented from cooling down too rapidly."

FILE WRAPPER (EXHIBIT 5) OF RAY PATENT NO. 1,235,376.

The patents cited by the Patent Office Examiner during the pendency of this case were as follows:

Melas, 1,169,091—January 18, 1916;
Mack, 548,647—October 29, 1895;
Becker, 1,101,779—June 30, 1914;
Anderson, 719,716—February 3, 1903;
Ray 1,184,659—May 23, 1915;
Bullard 483,099—September 20, 1892.

There were originally but ten claims presented in the Ray application but as the art was developed and the novelty of the invention emphasized the foregoing references were not only overcome but the scope of the patent was expanded within legitimate limits.

The presumption of validity of this patent, like the first one, is strengthened by the consideration given it by the experts in the Patent Office.

The Ray v. Jarvis Interference adds to the presumption of novelty in favor of Ray.

By reference to the File Wrapper of Ray it will be seen by the official action of August 21st, 1917, there was a declaration of Interference No. 41,703 between Ray and a party named Jarvis regarding claims 14, 17, 18, 19 and 20 and the outcome of this Interference was favorable to Ray, so that these claims 14, 17, 18, 19 and 20 became the claims as they now appear in the patent.

INVENTION.

Plaintiffs enter Court with the presumption of law that both their patents are good and valid and cover patentable subject-matter over everything theretofore known. This presumption arises from the grant and issuance of the patent and is a statutory presumption. In any case where the question of patentable novelty is close or in doubt, this presumption, arising from the grant and issuance of the patent, must throw the decision in favor of the validity of the patent, so that if there were any doubt as to the patentability of the subject-matter of either of the patents in suit this *prima facie* presumption must control and the patents must be held valid.

Morgan v. Daniels, 153 U. S. 120;
Cantrell v. Wallick, 117 U. S. 679.

And this presumption is of such legal effect that:

"Evidence to overcome the presumption of invention arising from the issuance of the patent must be conclusive on the question."

Enc. of Evidence, Vol. IX, page 627;
Wilkins Shoe B. F. Co. v. Webb, 89 Fed. 982;
Regina Co. v. New Century Music Box Co., 138 Fed. 903.

Or, as otherwise stated, in order to overcome this presumption arising from the grant and issuance of the letters patent, the proof offered by defendant must be both reliable and certain. In case of

any doubt the presumption must control the finding of fact.

Walker on Patents, Sections 491, 494;
Robinson on Patents, Section 423.

Invention has been defined to be:

> "The double mental act of discerning in existing machines, processes, or articles, some deficiency and pointing out the means of overcoming it." (*General Electric Co. v. Sangamo Electric Co.,* 174 Fed. 346, 351.)

Remembering that defendant's device represented by Exhibit 1 is a Chinese copy of plaintiff's patented structure, as shown by the patents and by Exhibit 7 and that the reasons must have been potent and sufficient for defendant abandoning its former vertical axis burner with the saucer flame on the advent of the Ray burner, the Court need not concern itself seriously why the Ray burner and the infringing Simplex burner have met with such success or why they are on the market at all. They are successful and have grown in favor, both of them, and there must be something about them that enables them to compete successfully with other and hitherto standard types of burners.

THE COURT'S OPINION ANALYZED.

The merit of the Ray patented invention was thus clearly recognized by the Trial Judge who said in his memorandum opinion (R. 208):

> "The burner is a compact, useful, and superior machine, or instrumentality, to supply fuel oil to fire-boxes, and of extensive use."

But despite the recognized merit of the Ray invention and the further outstanding fact that defendant's imitation is closer to the patented structure that anything in the prior art, the Court finds the Ray patents void as lacking invention and as aggregations of individually old elements.

The Supreme Court said in the Grant Tire Case, 220 U. S. 428; 55 L. Ed. 527:

> "And yet the Rubber Company uses the Grant tire. It gives the tribute of its praise to the prior art; it gives the Grant tire the tribute of its imitation, as others have done. And yet the narrowness of the claims seemed to make legal evasion easy. Why, then, was there not evasion by a variation of the details of the patented arrangement? Business interests urged to it as much as to infringement.
> * * * * * * *
> "* * * the extensive use which it attained, and more certainly the exclusive use which it attained, could only have been the result of its essential excellence, indeed, its pronounced superiority over all other forms. Here, again, in our discussion, a comparison is suggested between it and other tires, and the inquiry occurs why capital has selected it to invest in and advertise and not one of the tires of the prior art, if it be not better than they? But the effect of advertising is mere speculation; to the utility and use of an article the law assigns a definite presumption of its character, as we have seen,

and which we are impelled by the facts of this record to follow."

That the Trial Court misconceived the true doctrine of combination claims is apparent from a reading of the decision which shows that the Court believed a combination could only be sustained if some one or more of the specific elements was new. For thus says the Court (R. 208):

> "Patent No. 1,193,819 is primarily a combination or aggregation of elements, though perhaps sufficient for any separate element *if new.*
> * * * * * * *
> "That there is novelty in any part is but faintly suggested in argument." (Italics ours.)

He, therefore, concludes that:

> "to assemble motor, fan and cup with their incidents upon a single shaft, all in simple and compact form, is not invention, but is only the ordinary and anticipated advance in the art by reason of mechanical skill, and the enterprise of the manufacturer and salesman."

He further said,

> "the patents pleaded in defense" (27 in number) "disclose every element and incident of complainants, save the partition diaphragm or baffle in the fan casing."

The Court did not find that these prior patents showed the *complete combination* of plaintiffs' patents, but merely that they showed in other forms most of the separate elements going to make up plaintiffs' patented combination, and with this

incorrect application of the law relative to combination patents, he dismissed the bill.

THE LAW AS TO INVENTION AND COMBINATION CLAIMS.

The claims in issue are what are known in law as "combination" claims; i. e., made up of a number of correlated elements.

It is an elementary rule that in combination claims the invention, if any, lies in the *combination,* and not in the novelty of any individual element.

Imhaeuser v. Buerk, 101 U. S. 660;
Griswold v. Harker, 62 Fed. 389.

See also:

Leeds & Catlin Co. v. Victor, supra;
Diamond Tire Company case, supra.

In Yesbera v. Hardesty Mfg. Co., 166 Fed. 125, it is said:

> "The point to be emphasized is that the law looks not at the elements or factors of an invented combination as a subject for a patent, but only to the combination itself as a unit distinct from its parts."

To the same effect is the case of Gormully & J. Mfg. Co. v. Stanley Cycle Mfg. Co. et al., 90 Fed. 279, 280:

> "Of course the claim cannot be defeated by showing that each of its elements, separately considered, was old. The defendants must prove that the combination was old. If they fail in this, they fail irretrievably."

See also:

Owens Co. v. Twin City Co., 168 Fed. 265.

"Time will be saved if the concession be made at the outset that the elements of the claims, considered separately or in different environments, were, speaking generally, all old. The question here is was the *combination* old? That the claims cover a combination, and not an aggregation, we have no doubt, even though the operations of the separate elements do not synchronize. Forbush v. Cook, 2 Fish, Pat. Cas. 668, Fed. Cas. No. 4931; Heath Cycle Co. v. Hay (C. C.) 67 Fed. 246; Int. Recording Co. v. Dey (C. C. A.) 142 Fed. 736, 744." (United Co. v. Beattie, 149 Fed. 736, 738 (C. C. A. 2nd Circuit.)

As said by your Honors in *Stebler v. Riverside Heights Orange Growers' Assn.,* 205 Fed. 735-738:

"True, we may pick out one similarity in one of these devices, and one in another, and still one in another, and by combining them all, anticipate the inventive idea expressed in the Strain patent, but the combination constituting the invention is not found in any one of them. As we had occasion to say in Los Alamitos Sugar Co. v. Carroll, 173 Fed. 280, 97 C. C. A. 446:

" 'It is not sufficient, to constitute an anticipation, that the devices relied upon might, by a process of modification, reorganization, or combination, be made to accomplish the function performed by the device of the patent.' " (Citing numerous cases.)

"A patent for a combination is not anticipated nor invalid for lack of invention because an expert may be able to build up the patented device by selecting parts taken from

the prior art. (For other cases see Patents Cent. Dig. Secs. 27-30; Dec. Dig. Sec. 26.) Kryptok Co. v. Stead Lens Co., 207 Fed. 85, 93."

The trial judge in the excerpt last above quoted, recognizing novelty in the Ray diaphragm as an element in the Ray combination. This makes his conclusion of invalidity of the Ray patents all the more inexplicable.

VALUE OF THE DIAPHRAGM OR BAFFLE.

It is essential that some means be provided whereby air delivered from the periphery of the fan shall be conducted to the air nozzle without loss of pressure and with a high degree of efficiency. This is done in the Ray & Simplex Burners by means of the diaphragm or baffle referred to in the excerpt from the Court's opinion quoted supra.

Because of this *diaphragm,* air is delivered to the air nozzle at *practically the same pressure as it is delivered from the fan and with a high velocity head.* It will be obvious to the Court that if this diaphragm were not present, the stream of air discharged from the periphery of the fan would flow axially toward the air nozzle while in contact with one side of the rapidly revolving fan. This would cause a *swirling* of the air and greatly reduce the efficiency of the fan and also very materially reduce the velocity of discharge of air from the nozzle.

In other words the effect of the diaphragm, as shown by long experience, is to increase the efficiency of the fan with diaphragm very materially as compared with the same fan without diaphragm.

It is thus seen, that in a burner of this type it is absolutely necessary, for good operation, that an envelope of air be discharged from the nozzle at the highest practicable velocity and that with this type of construction it is absolutely essential that a diaphragm or similar passageway be built into the burner to conduct the air from the fan periphery to the air nozzle.

Thus it is seen that this diaphragm is an important and essential part of the burner under practical operating conditions.

THE MERIT OF THE DIAPHRAGM IS RECOGNIZED IN THE DEFENDANT'S INFRINGING IMITATION (Exhibit 1).

If additional reasons are necessary they may be found in part in some of the literature before the Court. For example, see Defendant's Exhibit A, a circular of plaintiff offered by defendant at R. 55-56, where it was stipulated that the plaintiff manufactured and sold here in California oil burner devices as *disclosed, illustrated* and *described* in this catalogue of the plaintiff company. Defendant apparently accepts the statement there made as correct. While this is a comparatively recent publication (1921), it gives an outline of the oil burner problem for industrial uses that is instructive.

In the various designs and patents submitted by defendant to prove lack of novelty in Ray, the following points are evident:

1. No diaphragm of the character we have been discussing is provided, previous to the Ray patents.

2. Where a fan is provided, all other designs than the Ray show a *propeller* type fan of a type which will deliver *large amounts of air at low velocity* and practically no pressure. The Ray design provides a fan to deliver a *small quantity* of air at *high velocity,* through a *restricted* and carefully designed orifice.

3. In no other design than the Ray is the blast of high velocity air conducted to and through a nozzle in such a manner as to mix with the atomized fuel oil, and carry the mixture into a furnace.

HISTORY OF THE RAY INVENTION.

Mr. Ray, the inventor and patentee, as shown by the evidence (R. 174 and following), started his career as a mechanic at the early age of 13 and obtained his training and education in the school of experience, gradually working his way upward until he is now president of the plaintiff corporation. The latter has under slightly varying names been in existence since 1871, engaged, until the advent of the present patented burners, principally in marine work, sheet metal and plumbing and the manufacture of stoves and ranges.

Mr. Ray foresaw the need of improvement in means for burning oil whether used in a range or under a boiler. He studied his problem and his efforts eventually met with success; but he did not accomplish this fact overnight. He spent time and money in experimentation and in introducing his ideas. As usual, his competitors, including defendant's predecessors, foresaw the feasibility of the plan long before the general public took it up. They copied it. They abandoned their former methods of oil burner construction and have since been selling their imitation product in the very territory where Mr. Ray created the market.

RAY INVENTION CONCEIVED IN 1913; REDUCED TO PRACTICE MARCH AND APRIL, 1914.

Mr. Ray's account of his development of the patented inventions is as follows, beginning (R. 175):

> "A. During 1911 and 1912, I was experimenting on other types of oil burners, aside from the rotary type, but during 1913 we started experimenting on the mechanical rotary type, and I made my first drawing in—I have got to refer to dates, there are so many of them—November, between November and December, 1913, I made my first drawing of the model burner over in the corner of the room. That burner was manufactured between March and April, 1914, and put in operation in a small building on our property in the Mission."

Witness refers to the first model burner which is in evidence as Exhibits "21", "22" and "23" (R. 177).

Continuing, the witness says (R. 175-176):

"In my first burner that I manufactured, which is exhibited here, it consisted of a casing for a fan on this side, a nozzle projected into the furnace. On the opposite side of this casing, which was a cover which supported the motor, which in turn had a protected shaft, carried a fan, an atomizer, which was centrally located in the nozzle. On this first burner it was fastened to the furnace permanently, and had no means of swinging to and from the furnace for inspection, or removing it from the reflex head of the furnace, after shutting down. I soon discovered that this was not the proper thing, and you will note that I riveted on two band iron hinges which I used for wheeling this burner from the furnace, using a flexible oil connection to make the connection to the oil feed valve."

FIRST MODEL 1913 BURNER DID NOT HAVE THE DIAPHRAGM. RESULT: LOSS OF PRESSURE.

Continuing, Mr. Ray says:

"*This first burner, I had no air diaphragm in it for carrying the air to the nozzle;* we found that by taking air pressures from the periphery of the fan and also at the nozzle that *there was considerable drop in air pressure.*"

* * * * * * *

"We have the motor in the factory at the present time, it was an Emerson motor; we have it now running a small emery wheel. The only thing missing is practically the atomizing cup."

* * * * * * *

"A. And the extended motor shaft.

Q. There was (is) a conical projection from the large casting, there, with internal radial ribs; what is that shaft?

A. That is how I accidentally discovered the air vent in the nozzle. That was put in for another purpose and it was never used for that purpose. I accidentally discovered the air vent in the nozzle through constructing it that way." (Italics ours.)

REDUCTION TO PRACTICE MARCH, 1914, NOT DISPUTED.

Continuing, the witness says (R. 177):

"We have records in our factory books showing dates of starting, and all the different steps we took.

* * * * * * *

"A. The order for this machine was started on March 10, 1914.

* * * * * * *

"The COURT. I do not see that all that detail is necessary. If it is disputed you can offer corroborating evidence."

THE SECOND RAY BURNER SEPTEMBER, 1914.

Continuing, Mr. Ray says (R. 178 and following):

"The next step was a drawing made on September 13, 1914, which we can produce, of the next burners we manufactured.

* * * * * * *

"These are the original drawings."

* * * * * * *

Drawings in evidence as Exhibits "25" and "26" (R. 179):

"This drawing, here, was drawn on September 13, 1914, and illustrates—

* * * This is the same drawing that was handed to the patent attorney when this case here was taken up.

Q. You mean patent 1,193,819? A. Yes.

Q. Filed November 30, 1914? A. Yes.

Mr. WHITE. I do not see the relevancy of the history of his invention.

Mr. TOWNSEND. They offered this Witt device, and we must show the result."

Continuing, the witness says:

"In the first drawing, showing the burner sectional view, we have a fan casing with two brackets which support a motor, which is directly connected to a large diameter *fan with small blades and where the air is taken behind a stationary diaphragm.* On the end of the same shaft is fastened a rotary or atomizing cup. This cup is in the center of an air nozzle that protrudes through the furnace lining; the air is taken centrally through one side of the blower casing and discharged centrally on the opposite side, through the nozzle, and around the revolving atomizer. The second sheet of drawings was drawn primarily to show the hinging of the burner, which is illustrated in the first Ray patent, bringing the oil through the hinges of the furnace plate and the blower case." (Italics ours.)

(R. 180.)

"We manufactured the first burner under date of October, 1914, and two under date of December 31, 1914, which are shown in our shop factory books.

* * * * * * *

"The first one we sold was to the Standard Oil Company, on the steamer 'J. A. Moffit'. This burner is still in operation. The second burner we sold to the Reichardt Duck Com-

pany, here at Colma, California. That burner is still in operation."

EXTENT OF USE.

The witness says (R. 182):

"In 1915 there were 55 burners sold, representing a net price of $6234; in 1916, 276, representing $35,668; in 1917, 358, representing $53,671.71; in 1918, 310, representing $49,-661.54; 1919, 572, representing $93,031.55; in 1920, 826, representing $136,099.22; in 1921, 719, representing $116,813.35; in 1922, 1468, representing $221,988.60; in 1923, 2982 burners, representing $465,150.36, a total of $1,178,-318.98."

As said by your Honors in Morton v. Llewellyn et al., 164 Fed. 693:

"Apart from the presumption of novelty that always attends the grant of a patent, the law is that when it is shown that a patented device has gone into general use and has superseded prior devices having the same purpose, it is sufficient evidence of invention in a doubtful case." (Citing numerous cases.)

RAY EXHIBITED HIS BURNERS FREELY AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION; AND DEFENDANT'S PREDECESSOR PROCEEDED FORTHWITH TO COPY IT.

To quote Mr. Ray's testimony (R. 183-184):

"Q. Did the predecessor of the defendant exhibit at the Panama-Pacific Exposition?

A. It did.

Q. What was the name of that concern?
A. American Standard Oil Burner Co.
Q. How near to your exhibit was theirs?
A. Well they were in the same section, about 70 feet south.
Q. Did any of the officers or employees or engineers of the defendant's predecessor see the Ray burner?
A. Yes, they came in quite often, and Mr. Beecher and Voskueler, their engineer, made us numerous visits.
Q. Did they eventually acquire, so far as you know, one of the your rotary burners?
A. To my knowledge they did.
Q. When was that?
A. It was in September, 1915.
Q. Up to that time had the defendant's predecessor or the defendant ever put out a rotary horizontal burner, to your knowledge? (150—114)
A. I had never seen any, to my knowledge.
Q. How long after that did they put out a burner of that type?
A. The first burner of that type I seen was at the Panama-Pacific Exposition in late October."

On redirect (R. 186) witness shows that the only difference between the Ray burner and the first copy made by defendant's predecessor, American Standard Oil Burner Co., was that the shaft supporting the large diameter fan and the cup, instead of carrying and being driven directly by the motor was driven by a belt, as seen in the enlargement Exhibit 28 and on the inside of the back cover of the publication "Architect and Engineer" for November, 1915, Plaintiffs' Exhibit 20 (R. 187).

However, the defendant's predecessor very shortly changed its mode of driving to follow Ray exactly by dispensing with the belt and pulley. The imitation has been persisted in by the present defendant even to the copying of the details of oil connections and return, through the hinges, the double T, details of latch, proportions and all.

A more glaring case of wilful infringement can scarcely be imagined.

It only serves to accord added merit to the Ray invention. "Imitation is sincerest flattery."

Yet the salesman, Mr. Delaney, posing as an expert for defendant, testified that there is no invention in Ray's accomplishment, and the Trial Court itself says that the enterprise of the manufacturer *and salesman* would have accomplished the same thing. (See excerpt from Court's opinion.)

This confusion of the offices of a manufacturer and *a salesman* is apparently why the Trial Judge permitted the salesman Delaney to testify as an expert over the objection of plaintiffs.

CONDUCT OF DEFENDANT IN ADOPTING THE PATENTED DEVICE IS PROOF OF INVENTION.

The presumption of novelty arising from the grant of the patent and the fact *that the defendant thinks so well of the device that defendant uses it itself*, has frequently been assigned by the Courts

as the principal reasons for holding an invention patentable.

> "The fact that a patentee, by his device, produced results which intelligent and ingenious inventors in the same art had sought for years without avail, and that such device went into immediate and extensive public use, *and was furthermore used by the defendant,* tends strongly to show that it was the result of inventive faculties." (Dowagiac Mfg. Co. v. Superior Drill Co.; P. P. Mast & Co. v. Same, 115 Fed. 88, 53 C. C. A. 36 (6th Cir.).) (Italics ours.)
>
> "Where, upon suit for infringement, alleged anticipating constructions are set up by the defendant, the fact that he *appropriated the complainant's production as to the foundation of his own business and had been very successful, is persuasive evidence* of the advantages of the complainant's structure over the alleged anticipatory constructions." (A. R. Milner Seating Co. v. Yesbera, 133 Fed. 916 (6th Cir.).) (Italics ours.)

All these topics of "extent of use", "appropriation of the patented structure by defendant", and "combination patents" are excellently illustrated and applied in the opinion of the Supreme Court in Diamond Rubber Co. v. Consolidated Rubber Tire Co., 220 U. S. 428, 55 L. Ed. 527:

> "One criterion of invention is that others have sought and failed, even when the process is so simple, when discovered, that many believe they could have produced it if required. Walk. Pats., Sec. 26." (Hanifen v. Armitage, 117 Fed. 849.)

J. H. BECKER.

ATOMIZER FOR OIL BURNERS.

APPLICATION FILED MAR. 10, 1913.

1,095,447. Patented May 5, 1914.

Fig. 1.

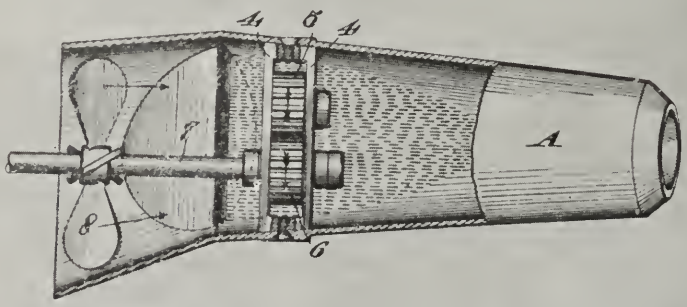


Fig. 2.

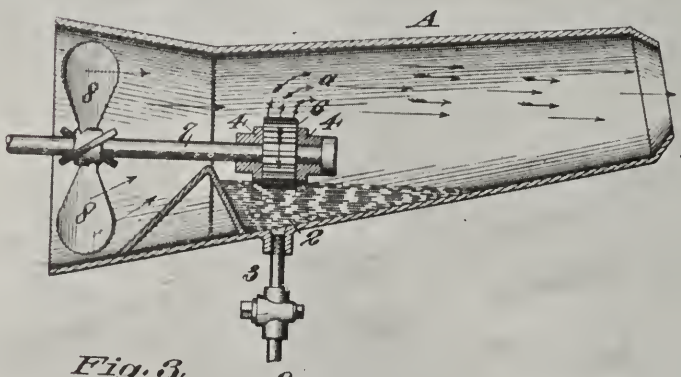
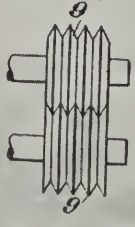


Fig. 3.



WITNESSES:

Charles Pebbles

Thos. Eastberg

INVENTOR

Julius H. Becker,

BY G. H. Strong,

ATTORNEY

Simplex Water Method Burner

Directions for Operating and Maintaining

BEFORE STARTING NOTE THE FOLLOWING CAREFULLY.

1—Always have Atomizing Plate No. 4 hot before turning on steady flow of oil.

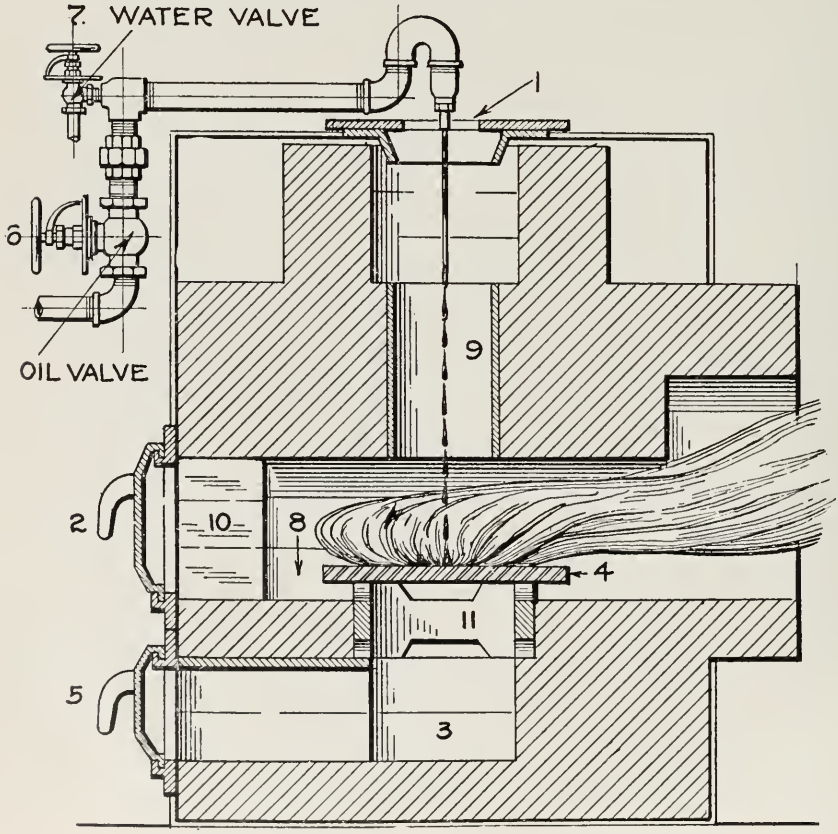
2—Never turn on oil after allowing the furnace to become partially cooled without first dropping a piece of burning paper down Down Draft 9.

3—Never burn oil without water. This makes smoke, soot and carbon.

Always have sufficient flame passing up around Atomizing Plate 4 from Fire Box 3 to ignite oil when it is turned on.

5—Always keep Atomizing Plate level.

6—Never feed more oil and water than the furnace will burn. If the oil and water run off the Atomizing Plate 4, when it is perfectly level, you are over feeding and will not get the best results.



From page 97—Catalog Ex. GG.

HISTORY OF THE DEFENDANT'S BURNER BUSINESS.

The defendant, Bunting Iron Works, succeeded three or four years ago to the business of the American Standard Oil Burner Company which previously had succeeded to the business of the American Heat & Power Company. The burners of whatever type manufactured by any of these three concerns have generally been termed by the name "Simplex".

The evidence shows and it will also be apparent from what has already been said that during the past ten or twelve years the Simplex Companies have had a great variety of burners and that only since the year 1915 and after the Ray Horizontal Rotary Burner had become thoroughly advertised that the American Standard Oil Burner Co. turned its attention to the rotary type and the development of a burner so closely following Ray in its early stages that it is shown to have been made direct from a Ray burner, purchased from the Ray Company about September, 1915 (R. 184).

The development of the defendant's burner business, through its predecessors, is fairly well illustrated chronologically by the following patents in evidence:

TYPE I—SIMPLEX WATER METHOD:

Becker patents Nos. 989,828, 1,068,037 and 1,114,848 in evidence as part of Exhibit "30", (R. 205), (cut of burner reproduced from page 97 Simplex catalogue—Defendant's Exhibit "GG" appears supra Plate V).

TYPE 2—ROTARY SPLASH TYPE:

Becker, No. 1,095,447, dated May 5th, 1914, (application filed March 10th, 1913), Defend-

ant's Exhibit "U" (R. 81); (see Plate VI opposite).

(NOTE: The device of this patent as far as known never went into use.)

TYPE 3—VERTICAL CENTRIFUGAL BURNER COVERED CUP TYPE:

Becker patent No. 1,101,779, dated June 30th, 1914, (application filed May 19th, 1913); (see Plate VII opposite).

TYPE 4—VERTICAL CENTRIFUGAL BURNER OPEN TOP CUP TYPE:

King, No. 1,158,058, dated October 26th, 1915 (application filed March 23rd, 1914) (see Plates VIII, VIII-A opposite; also Plate XV post).

Types 1, 3 and 4 had some commercial vogue, as shown by the defendant's circulars offered in evidence.

The King patent, it will be noted, was applied for as late as March 23rd, 1914, and, as seen by the testimony of Ray already quoted, *subsequent to Ray's invention date.* (Ray's conception and first drawing were "between November and December, 1913", R. 175. Reduction to practise March 10, 1914, R. 177.) King, therefore, is not a prior inventor, and of course his patent is not "prior art". It was not until a very much later date (October, 1915) that the defendant's predecessors, the American Standard Oil Burner Company, came out with its horizontal rotary burner in imitation and infringement of Ray.

PLATE VII

J. H. BECKE.

CENTRIFUGAL BURNER.

APPLICATION FILED MAY 19, 1913.

1,101,779. Patented June 30, 1914.

Fig. 1.

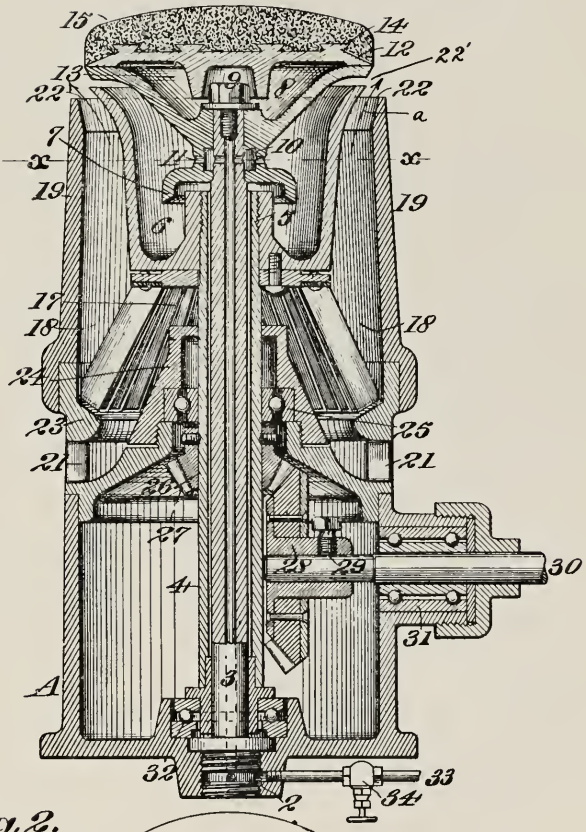
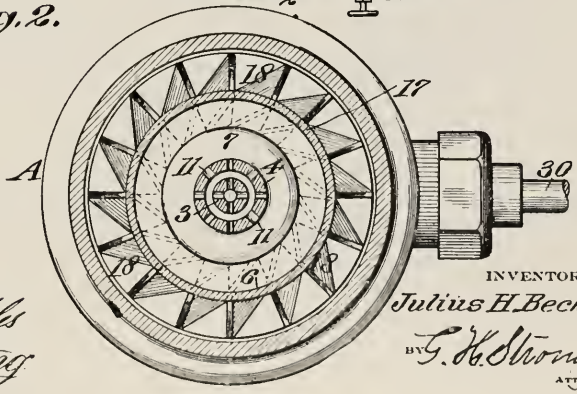


Fig. 2.



WITNESSES:

Charles Pickles

Thos. Eastberg

INVENTOR

Julius H. Becker

BY G. K. Strong

ATTORNEY

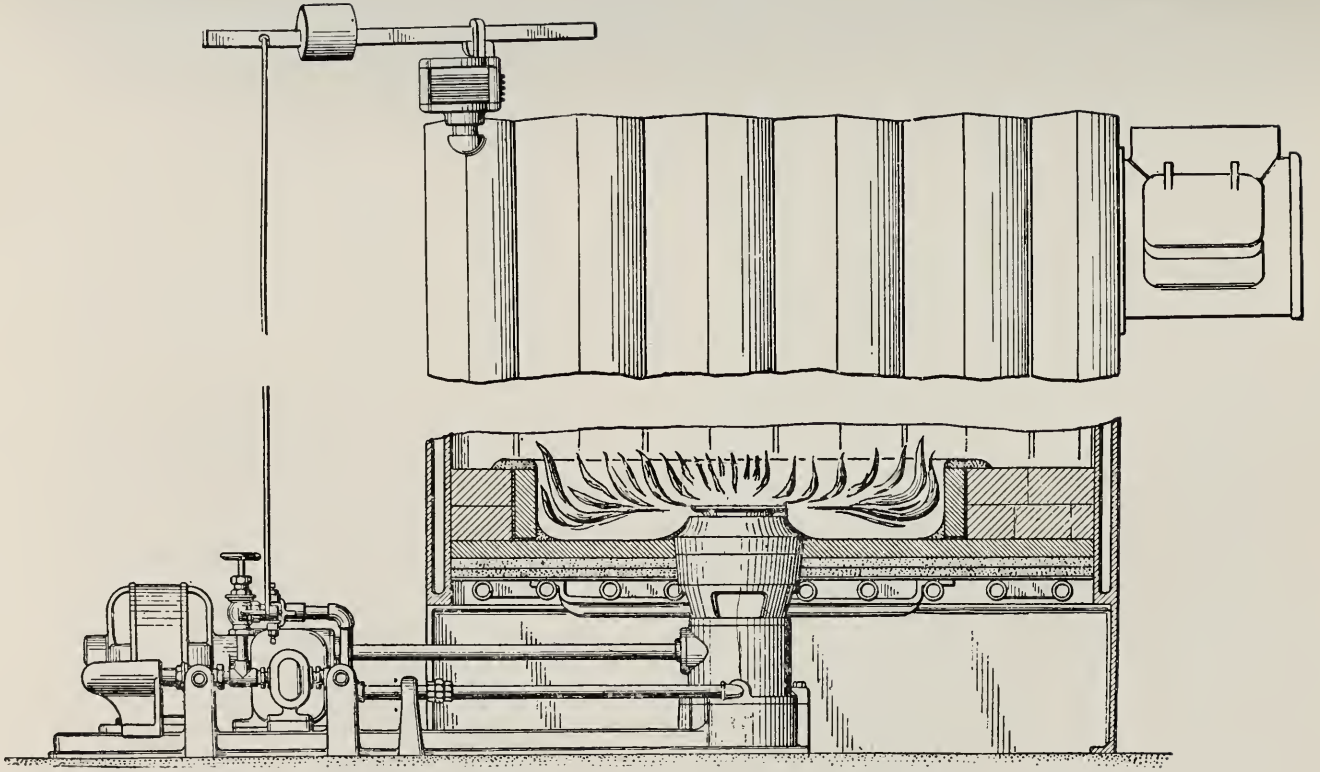
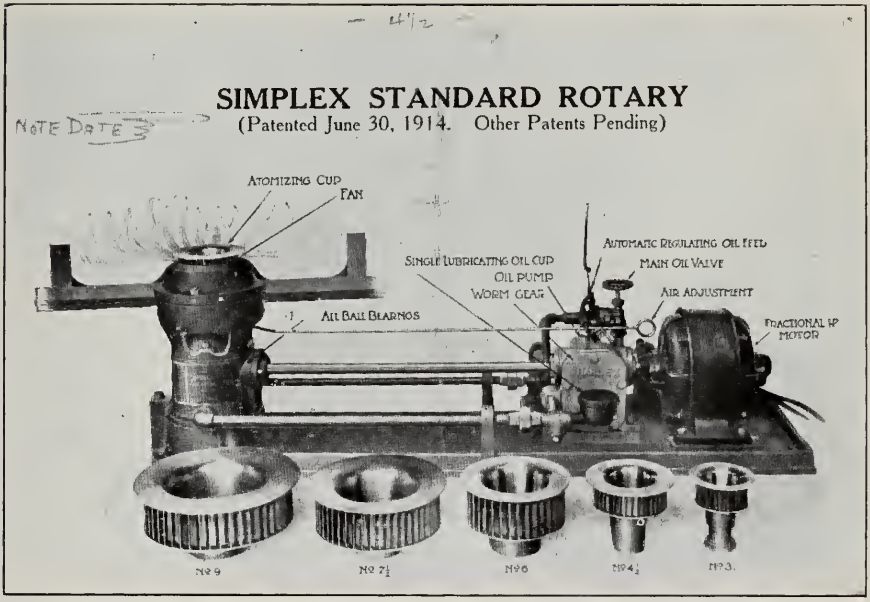


PLATE VIII

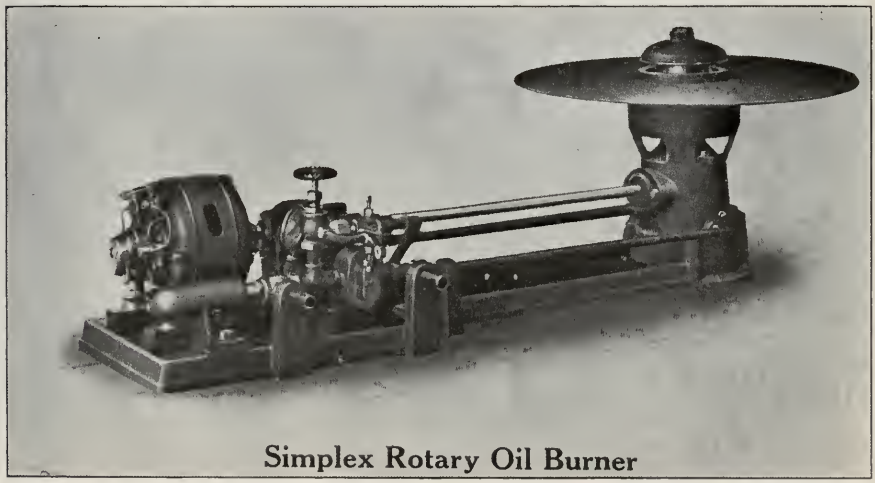
From page 70, Simplex Catalog, Exh. GG
This also appears at page 3, Deft's Exh. DD

King's "Saucer" Flame

PLATE VIII-A



Simplex Catalog—See Exh. 17—Note "Saucer' Flame.



Another type with "Becker" cover for cup.

DELANEY'S ARTICLE IN "FUEL OIL" MAY, 1923, (EXHIBIT 18—R. 137) AS AN ADMISSION AGAINST DEFENDANT'S CONTENTION OF LACK OF INVENTION.

The art prior to the advent of the defendant's infringing burner on the market is outlined by Mr. DeLaney, Vice-President and Sales Manager of the defendant corporation, in the article above referred to at pages 13, 14 and 15. He says in part:

(1) Oil As a Substitute for Coal—The Straight-Shot Steam Burner.

> "The fuel condition confronting us about fifteen years ago was soft coal costing about nine to ten dollars per ton and hard anthracite coal costing about twelve to fourteen dollars per ton while fuel oil and, at that time it was the crude oil straight from wells, costing around one dollar per barrel of forty-two gallons.
>
> "The success attained by those burning crude oil under power boilers using steam as the atomizing force through a 'gas pipe' burner was so successful and so economical that a man having a low pressure heating plant was very much interested and demanded serious attention."

(2) High Pressure Air Compressor Next Development.

Continuing, Mr. DeLaney says:

> "The stumbling block was the lack of sufficient steam pressure to atomize the oil and the fact that a low pressure heating boiler was not equipped to automatically feed water to the boiler to make up for the steam used through the burner and the eventual liming up of the boiler which was impossible to clean.
>
> "From the knowledge and information gained on steam atomizing burners there was built a motor driven air compressor unit, with an

oil pump mounted as an integral part, furnishing air at thirty to forty pounds gauge pressure and a burner similar to the steam atomizing burner was used, the grates were covered with a layer of fire brick, laid with air space between so that the necessary air for combustion would filter through the hot brick to the oil fire—and a course of fire brick on the sides and rear wall to protect the boiler fire box from the direct impingement of the oil flames."

(3) Lower Pressure Large Volume Blower Next Step.

Continuing, Mr. DeLaney says:

"But the heavy air pressure gave such a blow torch effect to the fire that the brick would shortly melt away. This caused broken sections on cast iron boilers or burnt out tubes and sheets on the steel boilers.

"Then followed the rotary figure 8 blower given three to four pounds of air pressure with similar type burner only the installation of the burner consisted in removing the coal grates and building a fire brick combustion chamber in the ash pit of the boiler, carrying the side walls up to a sufficient height so that all of the oil fire was completely housed in, even arching over the rear end of the chamber into a pocket. In each instance there was required a fairly large size electric motor to operate the plant as it required a compressor to furnish about one-half cubic foot of air for each pound of oil burnt."

(4) Continuing, DeLaney says:

"In 1892, the Navy Department Engineers made some experiments with a mechanical atomizing oil burner consisting of a revolving plate on a vertical shaft but other than a favor-

able and interesting report did nothing further."

(5) The Fess-Becker-King Vertical Rotary Burner the Next Step.

Mr. DeLaney next tells us:

"This led to the development of the vertical spindle rotary burner. This burner is driven by a small motor through bevel gears at a built-up speed of two to one, the motor setting directly in front of the ash pit door, and the burner head in the center of the fire box.

"The combustion chamber was built on a pipe frame set on the grate hangers, it is built saucer shaped of pieces of split fire brick and fire clay. In the rotary burner head is built a set of vanes which supplies the necessary air for combustion."

(6) The Ray—Infringing Simplex the Next Step.

Coming then to recent time DeLaney tells us:

"The next type of burner to follow was the horizontal rotary burner, consisting of small unit in which there is a small atomizing cup shaped somewhat like a thimble carried on the extended end of the motor shaft at a speed of 3400 R.P.M. On the same shaft is carried a fan which discharges its air current through a nozzle surrounding the atomizing cup. In this burner you have the mechanical atomizing of the oil by the rotary force of the revolving cup and sufficient air pressure to blow the atomized oil into the combustion chamber and as the fan does not furnish sufficient air for the maximum fire, there is an opening directly below the

---

(NOTE: Mr. DeLaney is possibly in error as to the date being 1892. Apparently he is referring to U. S. Naval Liquid Fuel Board Report published at the Government Printing Office, Washington, D. C., in 1904, and referred to by the Patent Office Examiners in connection with the King patent. See Plate XVI, Post.)

> burner which admits sufficient air for the larger fire. This burner is installed by removing the coal grates and lining the ash pit area with fire brick, floor, sides and back and inserting the burner nozzle through the front wall."

The point of all this is that Mr. DeLaney, as a salesman and as an officer of the defendant company recognizes that the development of the oil burner business has been by well defined steps including distinct types of apparatus according to the method employed and that at no time was it ever considered that one species of apparatus was even substantially like a preceding one. In other words, the advent of the Ray Rotary and infringing Simplex represented, in Mr. DeLaney's opinion, a distinct epoch in oil burner development.

Further than this, the groups of patents granted show the recognition of the same epochal factors and principles stressed by DeLaney.

There is in evidence an enlargement (Exhibit 28) of an advertisement of an early Simplex infringing burner where it is said:

> "The Simplex Junior Hortizontal Rotary Crude Oil Burner is brought out *to fill the demand for a cheap and efficient crude oil burner* for small boilers, hot-air furnaces and French ranges," etc.

A new means to fill a want. That has always been recognized as a good definition of invention.

THE EVIDENCE.

Turning next to the record of the evidence we find that the features shown, described and claimed in the Ray patents are emphasized, and the results of practical operation shown. As a matter of fact a patent is only valuable or meritorious where it is shown that it has evidently and unquestionably filled some practical WANT. If it has done that it has fulfilled the first requirement of the Constitution in promoting "the progress of science and useful arts". (Article 1, Section 8.)

Both parties called experts to explain the art. The plaintiffs' expert, Mr. R. S. Whaley, is a graduate of the University of Washington, a mechanical engineer of fourteen years' experience, and vice-president and general manager of the Power Plant Engineering Co., of Seattle, a concern dealing in oil burners and power plants in general (R. 61); Mr. Whaley's firm representing plaintiff corporation in the northern territory. He has had not only large practical experience in this art—but has had a very extended experience with patents pertaining to various engineering problems during the War when he was with the Government (R. 188).

The defendant's expert, Mr. De Laney, is vice-president and sales manager of the defendant corporation (R. 82 and 137). He has been with the defendant for three years; previously having been with the Fess System Co., of San Francisco, also in

the oil burner business, but who were making a different type of burner from that here in controversy.

The Fess System Co. was the originator of the so-called Vertical Rotary Head Oil Burner (see Plate XIV post), of which their president, Mr. Fesler, was the designer and originator. A history of the art shows that on the appearance of the Fess Burner on the market the defendant's predecessor gradually abandoned the so-called water method type of burner it had been marketing (see Plate V opposite) and began the exploitation of the so-called Becker and King type of burners to which further reference will be made later. It is to be borne in mind that defendant and its predecessors the American Standard Oil Burner Co. and the American Heat & Power Co. having changed but slightly in personnel during the past ten years being at all times practically under the same management, following much the same policy of imitation of competitors' goods.

Thus when the Ray Burner appeared in 1914 and 1915, the defendant's predecessors forthwith appropriated the Ray invention without so much as by your leave (R. 183-184).

Again, after the Fess Company changed from its vertical rotary head type of burner to the so-called "Turbine" type of mechanical atomization and after Mr. DeLaney had quit Fess and gone to work for the present defendant, the latter adopted the Fess Turbine method and is now using both the

Ray method here charged to infringe and the borrowed Turbine Type.

Of the Fess Turbine DeLaney says (R. 114-115):

"That Fess turbine uses a fan unit which establishes the current of air; that is led to the burner, and the burner proper has a revolving member carried on a ball bearing, or a series of ball bearings, and that member has a series of plates placed in the pathway of this discharging current of air, which causes this revolving member to revolve.

* * * * * * *

"XQ. Now, the Fess Company proceeded to put out a turbine type of rotary burner during the time that you were with them?

A. Yes.

XQ. When did you leave them to go with the present defendant?

A. Three years ago.

Q. Up to the time that you came with the defendant, it is true that the defendant had never put out a turbine burner such as they are putting out to-day, which is now before the court?

A. Yes.

Q. Now, at the time that the Ray burner was known to you during 1915, and at the time the Fess burner came out, how soon after that did you first hear of the defendant's horizontal rotary?

A. I don't know as I have any way of fixing that date.

Q. Well, approximately, your best recollection.

A. I could not say whether it was 1915 or 1916.

Mr. Townsend. When we are speaking of the defendant's rotary burner we might include,

as well, the predecessors of the defendant, American Heat & Power Company, and American Standard Oil Burner Company.

Mr. WHITE. The Bunting Iron Works did not go into this business until 1919."

These facts are merely adverted to, to show the tribute of imitation that defendant pays to competitors and to Ray in particular as an apparent matter of principle.

Mr. Whaley tells us on direct, something of the functions and mode of operation of the patented Ray invention as exemplified in the plaintiffs' and defendant's structures (Exhibits 7 and 1). Referring to these exhibits and to the enlargements of the drawings of the second Ray patent (Exhibits 8 and 9) and of the first Ray patent (Exhibit 15) and to elements of the Ray machine represented by Exhibits 10, 11, 12 and to the drawing of defendant's burner (Exhibit 13), Mr. Whaley points out in somewhat more detail and from a practical viewpoint the outstanding characteristics which the patents themselves have featured.

Mr. Whaley shows that the fan is of a *high velocity, small volume* type, producing *insufficient air for combustion but only sufficient for atomization.* The *diaphragm* is a direction means for spreading the air from the fan into a thin film without diminution of velocity for proper delivery around the oil cup.

Mr. Whaley says (R. 66-67):

"This fan" (indicating) "is rotated by the motor discharging * * * at high velocity, at high pressure, a small amount of air * * *."

* * * * * * *

"The air then is discharged through here and out through this opening, here, on the front part of the burner. This nozzle is fastened to the front part of this housing by two screws and makes an air-tight joint there between the housing and the nozzle; by removing this nozzle from the front of the housing you can better see the place where the air comes out and surrounds the atomizing cup; the air flowing through this nozzle of restricted area here is forced out around the outside of the cup under rather high pressure. The nozzle is shown on the cross-section in evidence here as No. 17, patent No. 1,285,376, Exhibit 8. The cup throws the oil off normal to its axis of rotation in this way, and the air cutting across that film of oil as it leaves the periphery of the cup is the agent for the atomizing of the oil and the mixing of the air with it for combustion; that is part of the air for combustion, but primarily for the atomization of the oil. I might say here for the Court's information that oil to be burned properly and efficiently must be broken up into very fine vapor and mixed with the proper amount of air to burn. The purpose of this whole device is to accomplish that result, the breaking up of the oil into very fine vapor and mixing with the oil for combustion."

SAME ADVANTAGES INHERENT IN INFRINGING SIMPLEX.

Mr. Whaley says (R. 67-68):

"I have before me here a drawing entitled Simplex oil burner. (Exhibit 13.) This draw-

ing is a longitudinal cross-section of a rotary horizontal oil burner having a motor and a shaft, the end of the shaft terminating in an atomizing cup mounted on the shaft, a fan of relatively large diameter and small blade area.

* * * * * * *

"This drawing that I have now marked Plaintiffs' Exhibit 13 was made partially under my direction from the machine shown here marked Plaintiff's Exhibit 1 * * *.

That is the defendant's burner. To continue the description, the fan is of *large diameter,* and relatively *small blade area,* discharging its *air over a thin diaphragm through* a housing, emitting into a nozzle 14—the *thin diaphragm* being marked 3, the fan being marked 5, the air passage behind the diaphragm being designated as air and being marked 4; the nozzle surrounding the atomizing cup being marked 7, and the air passage through the nozzle being marked 14; the oil is delivered into the cup, where it is driven off radially in a direction normal to the axis of rotation and picked up by a blast of the high *pressure* air at the periphery of the cup, and the oil is converted into a fine vapor and projected into the furnace." (Italics ours.)

BOTH PLAINTIFFS' AND DEFENDANT'S STRUCTURES FOLLOW THE RAY PATENTS AND BOTH ARE SUBSTANTIAL EQUIVALENTS.

Continuing, Whaley says (R. 68-69):

"I have before me here a machine marked Plaintiff's Exhibit 1, which I recognize as an oil burner of the horizontal rotary type of the design known in the trade as the Simplex design. This is the motor, which in the sketch of

Plaintiff's Exhibit 13 is marked 11; this is the shaft marked 9 in Plaintiff's Exhibit 13; this is the fan housing, in which there is a fan of relatively large diameter and small plate (blade) area for discharging air over a diaphragm forward of the fan and behind which the air passes out into the nozzle, which is here marked in Plaintiff's Exhibit 7, and then passing around the outside of the atomizing cup marked in Plaintiff's Exhibit No. 11 to where it picks the oil up and discharges it into the furnace. The action of the air and oil in both Plaintiff's Exhibit 1 and Plaintiff's Exhibit 7 are identical; the atomization of the oil is accomplished the same way, exactly.

* * * * * * *

"A. The means for accomplishing atomizing in Plaintiff's Exhibit 1 and Plaintiff's Exhibit 7 are identical in every way.

The COURT. Is it disputed by the defense that they are identical?

Mr. TOWNSEND. I do not know. I do not know whether they make any serious contention that they are not infringements.

The COURT. If they do not, there is no use taking up time on it."

MACHINES IDENTICAL EVEN AS TO OIL CONNECTIONS.

Mr. Whaley says (R. 69-70):

"The WITNESS. I have before me a drawing * * *—marked Plaintiff's Exhibit 14, which represents an exterior view of a machine designated Plaintiff's Exhibit 1. This drawing was made partially under my supervision, and is a true representation of an exterior view of this machine, showing the hinging device in particular. In this device, the oil from the source of supply

is brought through pipe 27, thence into the hinge marked 26, down through the pipe No. 25, into the pump, No. 23, out through the pipe No. 32, and if the oil is to be burned, then it is diverted to valve No. 22, if not burned it is not sent back to the source of supply through pipe No. 24, through hinge lugs 5 and 9, and out through the hinge 26, and back to the source of supply.

* * * * * * *

"It is a double tee where the oil comes in here, but there is a division between the two; they are not connected here. On the outside it does not appear. It is identical with the hinge in action and design on Plaintiff's Exhibit 7.

* * * * * * *

"The numbers used on Plaintiff's Exhibit 13 and Plaintiff's Exhibit 14 are in different colors. The black are used to describe patent No. 1,193,819, and the red are used to describe patent No. 1,285,376." (Italics ours.)

De Laney admits, R. 90, he doesn't know the amount of air pressure at the nozzle in defendant's device; and at R. 93 that the air volume is only sufficient for atomization and not for combustion. Thus at R. 93:

"A. The chief function of the air current in these two types of burners here is for the changing of the current or direction of the oil current from that of right angles to the shaft or axis to parallel to the shaft, or projecting forward.

Q. State whether or not in one of these devices, and I am now referring to the defendant's device and to the plaintiff's device which you see before you, the air issuing from the air

nozzle is sufficient for the purpose of combustion of the oil consumed in the furnace?

A. That amount of oil would be sufficient at *a low point of consumption;* in reaching the maximum power or capacity of the burner, it would not be.

Q. And under the latter condition, what is done in order to supplement that supply of oil in the operation of one of these burners?

A. There is a space of additional air allowed to enter the combustion chamber from the atmosphere; that is drawn into the combustion chamber by the pull of the smokestack." (Italics ours.)

And again says DeLaney (R. 97):

"A. In building a fan for a specific purpose, knowing the desired *pressure* of air that you wish to carry, the *pressure* of air will give you the diameter of your fan. The volume of air that you want will be controlled by the width of the fan.

Mr. WHITE. Q. What would be the proper design of a fan where you wished to take care of a small volume of air at a relatively high pressure?

A. Your runner would be *wide* enough to carry the necessary *volume* and the *diameter* to give you the necessary *pressure.* For a *small volume* it would be a comparatively *narrow* runner.

Q. State whether or not the fan which you find embodied in the defendant's device is designed in accordance with what you have just stated to be the factors entering into the design of a fan to take care of the amount of air which would discharge from the air nozzle in the defendant's device?

A. Yes, it would; it would give you a relatively *high pressure for a small discharge opening.*" (Italics ours.)

And on cross-examination (R. 111) DeLaney testifies:

"Q. And, in so far as these features of fan construction and air velocities and air pressures, you find them approximately the same in the plaintiff's device and in the defendant's device, do you not?
A. Yes."

Thus it is seen that the experts are in accord.

THE TERM "HIGH PRESSURE AIR" AS APPLIED TO RAY BURNERS.

When we speak of high pressure we mean high in relation to the pressure that would be possible to get with a propulsion type of fan. This pressure is, of course, many times higher than could be obtained with any other type of fan than the one used in the Ray or infringing Simplex burner, but is, of course, lower when compared with the pressure that can be obtained with an air compressor.

The pressure on the Ray (and infringing Simplex) burner varies from a few ounces up to perhaps two pounds per square inch, on some of the larger burners. The pressure obtainable with an air compressor set is, of course, much higher than this, or up around one hundred pounds per square inch. So all of the testimony offered by

the plaintiff about higher pressure and lower volume was given with the idea of making a comparison between the Ray burner type of fan and method of operation, and the type of fan used in all of the various burners patented before the patent of the Ray, all of which used the propulsion type of fan.

From the foregoing and from other facts appearing in the case we may summarize some of the distinctive advantages of the Ray (and of the infringing Simplex) burner.

(1) A horizontal rotary oil burner in which the oil and air are discharged horizontally in a compacted column, like unto the ordinary straight-shot burners, and differing from the flat, vertical axis, saucer-like flame of the vertical burners theretofore in use.

(2) A high temperature flame projecting under the boiler and not into the flues.

(3) A straight-shot discharge produced by a small volume of air at high velocity but insufficient in itself for combustion.

(4) The surrounding of the oil as it leaves the atomizing cup by a cylindrical blast of air which acts as an air jacket to cool the atomizing cup and which prevents the oil from dropping to the bottom of the firebox.

(5) Minimum power consumption with minimum air volume and maximum speed and maximum air velocity.

(6) Accessibility and protection of parts of the Ray Burner placed *outside of the boiler* away from the intense heat, thus affording protection and insuring long life with minimum of repairs.

THE PRIOR ART.

Mr. Whaley's summary of the prior art relied on by defendant, and his differentiation of that art from both the Ray invention and defendant's infringing device can profitably be set out here in condensed form for the convenience of the Court.

Mr. Whaley's qualifications as an engineer and practical expert and his familiarity with patents will scarcely be questioned. The Court evidently accepted him as fully qualified (R. 188):

> "Mr. TOWNSEND. Will you please state what experience, if any, you have had in the study of patents?
>
> "A. My greatest experience in the study of patents was during the war, when many hundreds of inventions came out that the Government was anxious to get to help win the war; and to facilitate the passage through the Patent Office of those that were meritorious, they established throughout the country various boards that examined all of these.
>
> "The COURT. Come briefly to the point.
>
> "A. I was on one of these boards that examined hundreds of these inventions and passed on those that were feasible."

VERTICAL AND HORIZONTAL ROTARY TYPES OF BURNERS OPERATE ON DIFFERENT PRINCIPLES.

Taking up the patents relied on by the defense Mr. Whaley, after stating that he has thoroughly examined all of the patents offered by the defendant, proceeds to divide oil burners into five general classes which would include two classes of stationary and straight-shot type with which we are not concerned and three general types or classes of rotary burners, one of which classes again may be divisible according to the character and action of the fan employed:

(1) Vertical shaft rotary in which the whole burner is set directly into the fire box and a saucer-like flame is produced; the heat spreading out in a horizontal plane directly *over* the burner so that the latter is exposed at all times to the intense heat of the interior of the furnace. (Illustrations of this type of burner are Fessler, Britten, Becker and King, plates XII, XIII, XIV, XV post.)

(2) The horizontal shaft rotary employing a fan and oil distributing cup on the one shaft; this class being divided in turn into two distinct species or types: the "centrifugal blower" type and the "propulsion" type fan.

(a) *Centrifugal Blower Type* of fan of small air volume and high velocity to which plaintiff's patented burner and defendant's Simplex infringing burner peculiarly belong in a class by themselves. A characteristic of both plaintiff's and defendant's device is that they each have their burner mainly outside the fire box; the oil cup projecting through the front of

the fire box and besides being air insulated by the arrangement of the conical projection of the air nozzle is adapted to project a solid volume of flame horizontally into the fire box, much after the fashion of a straight-shot steam pressure gas pipe burner.

(b) *Propulsion Fan* of large air volume, low velocity, to which class the entire prior art of so-called Rotary Burners belong. (See Klein, plate IV, and Mack, plate XI post.)

(3) The Turbine Type of burner in which a blast of air of relatively large volume is directed against peripheral blades on a rotating cup to whirl the cup and distribute the oil employing no fan at all. (See Eddy, plate X post.)

Mr. Whaley says (R. 189-190):

"As a matter of information, I must preface my remarks with a short statement. Oil burning is accomplished by five different methods. The methods that we are interested in here are the methods using a rotary atomizer. The atomization of oil by the rotary method is divided into three different and distinct types. You cannot transfer one of these types to the other with success. The three types are the vertical type, which can be subdivided into two smaller classes, an atomizing cup and fan, and a motor all on one shaft. The vertical type of burning oil is entirely different from the horizontal type of burning oil; a different principle is involved. If given a sufficient time I could explain that. The horizontal type of burning oil is differentiated in two distinct types, one where the agent that actuates the atomizing cup is a blast of air blown against a turbine or a fan. That device is entirely different from one where the agent that turns the atomizing cup

and the fan is all on one shaft, for this reason, that where the fan and the atomizing cup are on the same shaft driven directly by the motor, and the air used for atomization can be controlled independently from the rotation of the atomizing cup. Where the atomizing cup is actuated by a device that requires air to be blown through a turbine to turn it, if you diminish the amount of air actuating the turbine you slow down the speed of your atomizing cup and as a result you lose the efficiency of the atomizing cup. Therefore, in that type of burner, it is impossible to adjust the amount of air for atomization, and, therefore, you cannot accomplish the result that you can with a device where the motor, and fan, and atomizing cup are all on the same shaft. In the oil-burner business, these two types of burner are separate and distinct, as a buggy from an automobile. They are not used in the same manner. The automatic control of the air and oil cannot be applied to the type where the atomizing cup is driven by a blast of air. When you eliminate these patents cited where a different method is used for atomizing the oil and obtain a new result, you narrow the thing down to just these two devices, the Simplex device and the Ray device."

Mr. Whaley shows at R. 200 and 201 and elsewhere the importance of the *diaphragm* with reference to the character of *fan* used.

DIFFERENT TYPES OF FANS—THE PROPULSION TYPE; THE CENTRIFUGAL TYPE.

Defendant's attorney was seeking by this witness to draw a parallel; first, between the King and Ray

patented structures and next between the experimental 1911 King device and the Ray patented device.

Thus Mr. Whaley on cross-examination testifies (R. 199-200-201):

> "The fan on the King burner is a *propulsion type of fan,* which delivers a large volume of air at low pressure, which is used for combustion only, and assists in no way in the atomizing of oil. It applies, in the first place, to the vertical type of oil burner, which is entirely different in principle.
>
> * * * * * * *
>
> "The diameter of the fan that would go in the casing shown in model Plaintiff's Exhibit 'FF' is so small that it would be impossible for it to deliver enough air at sufficient pressure to atomize oil thrown from the periphery of an atomizing cup of the large diameter shown in Plaintiff's Exhibit 'FF.' This type of fan shown on the sketch marked Exhibit 'EE' is of a *propulsion type,* which *will deliver a large volume of air at* very low pressure, and could not at any velocity supply sufficient air to atomize the oil thrown from a cup of the size in the model 'FF'.
>
> * * * * * * *

To Insert a "Diaphragm" in King Would Defeat the King Concept.

> "*This device has no diaphragm or fan casing* along the same line as the defendant's device or the plaintiff's device, and *should they put a diaphragm with this type of fan it would utterly defeat the object of the fan,* because this is *not a centrifugal blower fan,* it is a *propulsion fan* that throws a blast of air *in line with the axis of rotation.* The *centrifugal*

PLATE IX

(No Model.) 2 Sheets—Sheet 2.

J. S. KLEIN.

ATOMIZER.

No. 473,759. Patented Apr. 26, 1892.

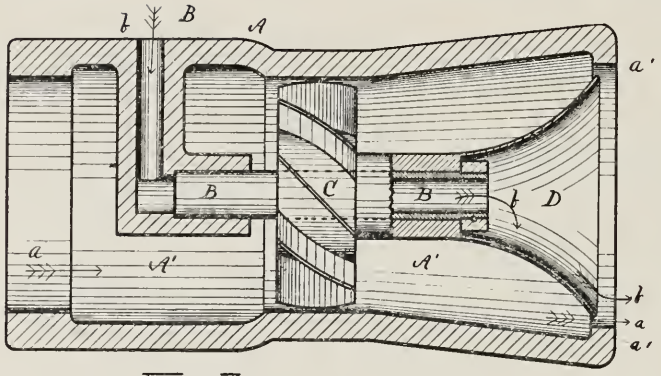


FIG 3

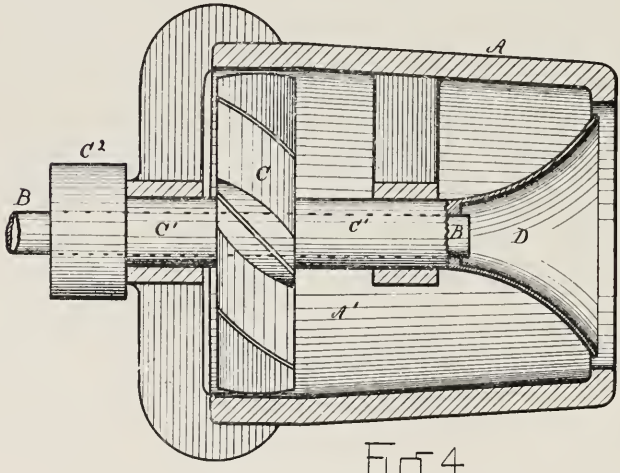


FIG 4

Witnesses
Will Marks.
E. F. Spaulding

Inventor
John S. Klein

By his Attorneys
Hallock & Hallock

blower such as used here in the device in question throws a blast of air in a *direction normal to the axis of rotation.* If you put a diaphragm in front of that propulsion fan it would utterly defeat the object of that fan.

"Q. I understand that drawing 'EE' shows no diaphragm?

"A. No, there is no diaphragm shown here.

"The COURT. What do you refer to by the diaphragm, what some have spoken of as a baffle?

"A. As a baffle, yes.

"The COURT. I understand now.

"A. This baffle here, No. 3. If you put a baffle of that kind in front of a fan of this type it would utterly defeat the object of the fan, because the direction of the air would be directed against the face of the diaphragm." (Italics ours.)

KLEIN PATENT, ATOMIZER, NO. 473,759, DATED APRIL 26th, 1892. (SEE PLATE IX OPPOSITE.)

This is a rotary burner of the *turbine* type as distinguished from the fan type of Ray.

Klein has a *small diameter, propulsion* fan, *wide* blades, *large* cup. Klein has *no diaphragm.* Indeed, Klein is the antithesis of both Ray and the infringing Simplex.

In Fig. 1 Klein shows a closed cup D, while in Figs. 3 and 4 he shows a flared bell-shaped cup open towards the furnace. As far as the cup is an open cup and flared, it more closely approaches the defendant's patent to King set up in the Counterclaim. In fact, we may safely state that any patent which the defendant may rely on to defeat the Ray

patent will, by the same token, destroy the King patent as far as concerns the claims sued on.

KLEIN A "PROPULSION" TYPE OF FAN.

The patent to Klein, the one most depended on to anticipate Ray, has a fan of the *propulsion* type as distinguished from Ray and the infringing Simplex. Mr. Whaley testifies (R. 191):

> "Citing the Klein burner as an instance, it has a burner of the same diameter as the atomizing cup. It is known from experiments made, not only by myself, but by others, that a fan not of this type, but even the high pressure blower type must be at least seven times the diameter of the atomizing cup to drive a sufficient force of air across the film of oil leaving the periphery of the cup, and to divert its direction approximately in line with the axis of rotation. *The fan in the Klein burner is of the propulsion type, and it delivers a large volume of air at low pressure.* This fan, having the same diameter as the atomizing cup, it would be impossible in the Klein burner to drive enough air at low pressure around the periphery of the cup to change the direction of the oil vapor coming off the periphery of the cup. My opinion of the Klein burner is that it would not operate successfully." (Italics ours.)

Concerning Mr. DeLaney's attempt (R. 87) to show that Klein may produce some pressure at the oil cup where he says:

> "The area of discharge is very much smaller than the passageway of the nozzle; that is, you have a restricted area at the discharge nozzle

in comparison to the chamber between the fan and the nozzle.

* * * * * * *

"It creates a pressure that is sufficient to keep the oil, that is, the atomized oil, or the oil leaving the atomizing cup, from striking the edge of the nozzle which is adjacent to the periphery of the cup."

It must be manifest to anyone that Klein relies almost entirely upon the *rotary oil cup of large diameter* to atomize the oil and, therefore, it is possible to use a very low pressure air. Ray and defendant on the other hand, rely upon the large diameter narrow blade fan *and direction diaphragm* to produce the *small volume* high velocity air to atomize the oil thrown off by the *small diameter oil* cup of Ray and Simplex.

It is manifest that to remove the Ray Diaphragm would result immediately in a reduction of air pressure and lower air velocity. The fact that the defendant uses the diaphragm as well as everything else in the Ray combinations sufficiently suggests the necessity of these features.

Concerning Klein, Eddy and others, it may be said as in Kirchberger v. American Acetylene Burner Co., 128 Fed. 599, (2nd C. C. A.) at page 605:

"We conclude, therefore, that said Bullier patent does not anticipate the patent in suit because: (1) The defendants have failed to show that it is capable of successful practical operation, or that the objections thereto were such as could be obviated without the exercise of the

faculty of invention. Sage v. Wyncoop, 104 U. S. 419, 26 L. Ed. 740. * * * (3) It appears that it does not operate upon the theory or in the manner covered by the invention in suit."

MISCELLANEOUS PRIOR ART.

Next taking up the individual patents offered by defendant to anticipate or limit the Ray patents in suit, Mr. Whaley says:

Cook Patent No. 73,506, Jan. 21, 1868, Exhibit B (R. 191-192):

"The Cook patent has no fan, and relies upon the induction of air by the natural draft of the chimney, or by forced draft from some exterior agent to furnish air for combustion. He relies for atomization entirely upon the centrifugal action of the cup. This burner would not operate for all the high pressure air or steam is blown in with the oil and the oil broken up in that manner and the air for combustion induced by the natural draft of the chimney or forced draft. It applies to an entirely different type of burner than the two burners in question."

Defendant's so-called expert DeLaney had previously admitted on cross-examination (R. 118) that Cook's revolving distributer D, with its radial vanes, was not a *cup* in any sense.

KINNEY PATENT NO. 315,145, APRIL 7, 1885 (EXHIBIT D).

Whaley says (R. 192):

"The Kinney patent is a steam jet air induction device or smoke-consuming furnace, and not a burner at all."

PLATE X

(No Model.) 2 Sheets—Sheet 1.

A. H. EDDY.

APPARATUS FOR BURNING OIL.

No. 540,651. Patented June 11, 1895.

Fig. 1

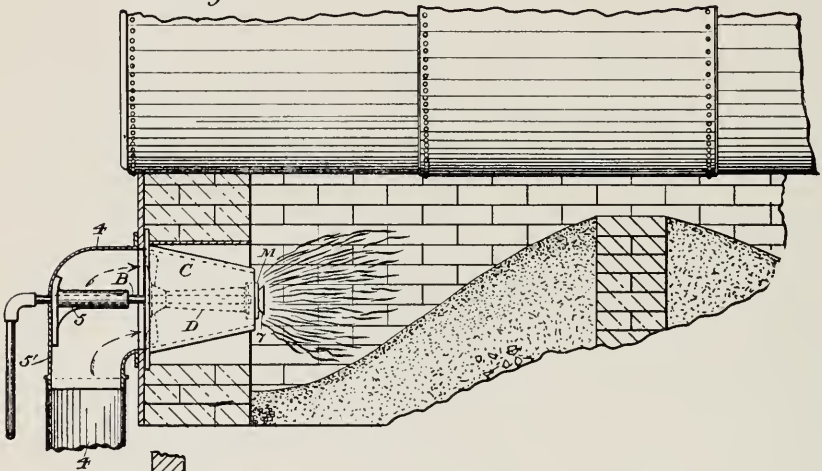
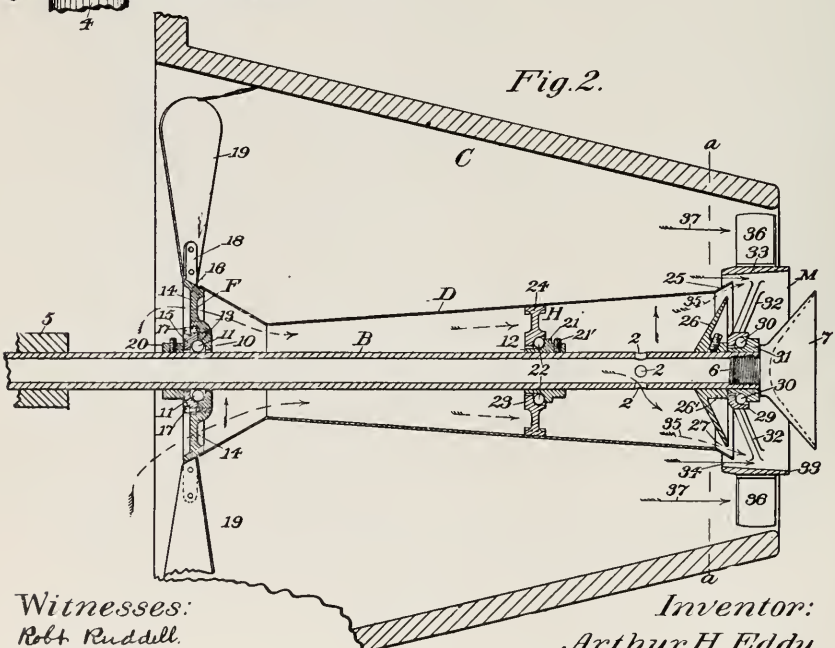


Fig. 2.



Witnesses:
Robt. Ruddell.
Fred. J. Dole.

Inventor:
Arthur H. Eddy
By his Attorney,
F. W. Richards

COLLINS PATENT NO. 426,713, APRIL 29, 1890 (EXHIBIT E).

Whaley says (R. 192):

"The Collins patent is a jet type of burner. The cup A in Fig. 2 is not an atomizing cup; it is simply a superheating device for heating oil in a jet type of burner, and does not rotate at all."

Previously DeLaney had testified (R. 119-120):

"Mr. Townsend. Q. Now, referring to Collins No. 426,713, that is another straight shot type of burner, is it not?

A. Yes."

* * * * * * *

"Q. And the burner is mounted on a swivel entirely separate and independent from the door hinges?

A. Yes.

Q. And it has a hinge movement entirely separate and *independent from* the door hinge movement: That is correct, is it not?

A. Yes." (Italics ours.)

LEYSON PATENT NO. 530,539, DECEMBER 11, 1896 (EXHIBIT G).

Whaley says (R. 192):

"The Leyson patent is merely a water-jacketed door for keeping a furnace door cold. It is not an oil-burning device."

EDDY PATENT NO. 540,650 AND NO. 540,651, JUNE 11, 1895 (EXHIBITS H AND I) (See PLATE X OPPOSITE).

These patents are strongly relied on by defendant but they are *turbine* burners and not at all analo-

gous to plaintiffs' or defendant's burners. Of course they lack a diaphragm.

DeLaney admits (R. 120) that patent No. 540,650 does not show a fan, air being supplied by force draft through the large conduit D and at (R. 121) he *admits that patent No. 540,651 is a turbine burner with two sets of turbine blades 19 and 36.*

Whaley says concerning the Eddy patents (R. 192-193):

> "The COURT. There are two Eddy patents.
>
> A. The Eddy patent No. 54,650 is a type of burner where the air is brought from an exterior source, and the atomizing cup driven from a pulley on the shaft. It is well known from experiments by myself and others that an atomizing cup with an angle of divergence such as that cup S, the oil pouring through that cup would not take the rotation of the cup, but would pour off the cup. The cup must be more nearly horizontal, so that the oil would be picked up by the rotation of the cup, to be atomized.
>
> The second Eddy patent, No. 54,651, is a device where the power for rotating the atomizing cup is supplied by a blast of air from an exterior source. This blast of air must be held at a constant pressure, so that the atomizing cup will be held at a constant speed. If you reduce the air pressure you slow the cup down and the oil is not atomized and your fire goes out. That device does not belong to the same system of burning oil as the two burners here in question."

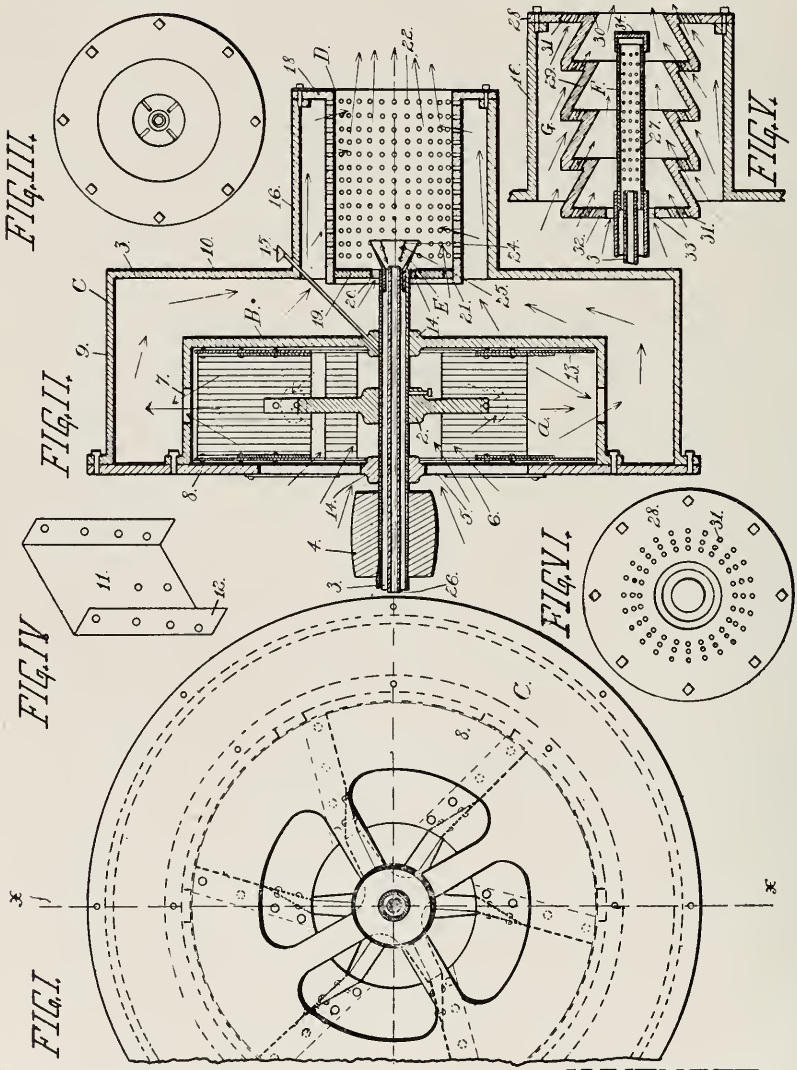
As indicative of DeLaney's unreliability, see his testimony at R. 95 of the record, where on direct

PLATE XI

(No Model.)

C. P. MACK.
HYDROCARBON BURNER.

No. 548,647. Patented Oct. 29, 1895.



WITNESSES
W. C. Swift.
V. G. Bradbury.

INVENTOR
Courtland P. Mack,
BY
ATTORNEY.

examination, in attempting to explain the second Eddy patent, he mistook a motor for a fan, and a bracket for a pulley, so that his own attorney had to correct him, as follows:

> "Q. Aren't you mistaken in regard to the device in the air nozzle being a fan? Isn't it an air-driven motor, in the second Eddy patent?
>
> A. Yes, it is.
>
> Q. And the part 5 which you took for a pulley is a bracket.
>
> A. A bracket, yes, that is correct."

If these Eddy patents, or either of them, are or is relied upon by the defense as their best reference, then manifestly the Ray patents must be sustained.

MACK PATENT NO. 548,657, OCTOBER 29, 1895 (DEFENDANT'S EXHIBIT J) (SEE PLATE XI OPPOSITE).

Concerning this patent Mr. Whaley says (R. 193-194):

> "The Mack patent has a fan and an atomizing cup, but at a glance it is evident to anyone familiar with the burning of oil that the burner would not operate for more than a period of a few hours before the holes E through the chamber D, surrounding the atomizing cup, would be plugged with carbon and oil and passage of air from the fan to this atomizing cup stopped. These passages for air between the fan and this atomizing chamber are so proportioned that the high velocity of the air from the fan would be lost unless a tremendous force were applied to the fan."

DeLaney's testimony on cross-examination (R. 122-126) practically corroborates Whaley both as to the doubtful operativeness of Mack and as to its differences in principle from both plaintiff's and defendant's device. Thus (R. 122-123):

"XQ. You note at the top of page 2 of the Mack specifications that the atomizer E is described as 'preferably conical in shape, with the larger end outward, and providing with radiating slots 24 and perforations 25.'

A. Yes.

XQ. So that that cup is a *perforated slotted* oil distributing cup, isn't it?

A. Yes.

XQ. What is the effect of throwing off the oil through the slots and perforations 25 of this cup upon the surrounding perforated cylinder D?

A. Well, you have a multiple of air jets coming off the cylinder D, which would carry that oil forward into the combustion chamber.

XQ. Let us see if that is true: *The cylinder D is stationary, is it not?*

A. *Yes.*

XQ. And these perforations are in lines radial to the axis of the rotating cup?

A. Yes.

XQ. So that the air jets coming through those perforations in D are coming crosswise of the axis of the rotating cup: Is that not true?

A. Yes.

XQ. Now, which way is the oil traveling from the cup, whether over the lip or through the perforations 25 and the slots 24 of the oil cup—that oil is traveling in a radial direction?

A. Yes, as your oil is admitted into that atomizing cup there, there is a certain amount of oil, that is, the oil that is passing over that first series of holes 25 passing out into D.

XQ. Being thrown by centrifugal force at right angles to the axis?

A. Yes, through these holes or perforations at right angles into the tube D."

* * * * * * *

"XQ. As a mechanic, would you say that the amount of air that would come through that little annular space 20 just rearward of the oil cup E would equal in any proportion whatever the amount of air that would come through the perforations in the cylinder D?

A. No.

XQ. The amount of air that would go through 20 would be infinitesimal compared with the amount that was intended to go through the perforations in D?

A. Yes." (Italics ours.)

And page 124:

"XQ. You would have the oil passing out through the perforations of cup E or out of the cup E traveling in a direct line in opposition to the air that is entering through the perforations of the wall of D, wouldn't you?

A. Yes.

XQ. And that would not be in toward the furnace?

A. No, that would be toward the center."

Manifestly, the small peripheral openings (7) in the fan casing (Figs. I and II) and the large air trunk into which these openings discharge are at best only remotely suggestive of the Ray combination where it is so essential to initiate and to maintain *small* air volume and *high* velocity throughout.

The fan of Mack is entirely different from either plaintiff's or defendant's fan.

To quote further from Mr. DeLaney's cross-examination (R. 125):

"XQ. The fan that you see in this Mack patent is of relatively small diameter, with respect to its width?

A. No.

XQ. It is relatively wide with respect to its diameter. Does that meet with your approval?

A. That is a matter of opinion what the relationship would be between the width and diameter.

XQ. As contrasted with plaintiff's and defendant's device, my statement is correct?

A. Yes.

XQ. You observe that the paddle fan that they have in here causes the air to escape through a comparatively small opening in the periphery?

A. Yes.

XQ. And this air that is set in motion by the fan, escaping through the apparently *small orifice 7, escapes into a relatively large air trunk?*

A. *Yes.*

XQ. And then is carried forward and distributed as you described into and through cylinder D?

A. Yes.

XQ. Now, as a matter of fact, do you consider the Mack device a very practical one?

A. Well, as the *air discharges through port 7 into that large area there, means a slowing up of the velocity of the air,* and that means killing or lessening the friction." (Italics ours.)

And at (R. 126):

"XQ. It would not serve the purpose, however, of either the plaintiff or defendant in their machines, as you construct them?

A. *Well, they do not do it;* why, I do not know.

XQ. You do not get that action, do you?

A. No."

* * * * * * *

"The COURT. Once more, I do not understand that the defendant has introduced these patents on their merits, or as illustrating the likeness between these patents and the others that are in suit, on their own device, other than certain points of resemblance, and I do not see any necessity for going into this cross-examination, whether it is a practical device or not. He has simply pointed out, as the Court remembers the testimony, that it shows some of the factors that enter into your device and the defendant's.

MR. TOWNSEND. I would like to say that a patent introduced for one thing may be received for everything.

The COURT. That is true, but again, we have a rule with respect to cross-examination. You may show by your own witnesses whatever you desire as opposed to their claim."

Manifestly, if plaintiffs could show, as here was shown by defendant's own expert that the Mack patent was in fact not only materially different from Ray, but, moreover, was impractical or inoperative, such examination was, under the circumstances, not only perfectly proper as cross-examination but germane to the very subject concerning which the witness has been called to testify: that is as to the alleged effect, if any, of the prior art on the Ray patents.

As observed by Judge Lacombe in Thomson-Houston Electric Co. v. H. W. Johns Co., 105 Fed. 249, 250:

> "Objection is taken that this is not proper cross-examination, since the prior patent was not referred to on the direct." But, says the Court, plaintiff's expert "has referred to the state of the art, briefly, it is true, but nevertheless sufficiently, in order to magnify the meritoriousness of the invention; and therefore defendants are within their rights in insisting upon a cross-examination covering the whole state of the art."
>
> "To permit a party to the suit to tell his own tale of a transaction like this and to conceal what is important to the defendant in regard to the same occurrence and at the same time, would be a gross perversion of justice, and would bring into discredit the policy of permitting parties to actions to testify in their own behalf." (Gilmer v. Highley, 110 U. S. 47; 28 L. Ed. 62-63).

In this connection it may be recalled that:

> "However close the resemblance between some prior alleged invention, even when put into actual use, and the patented invention, if such alleged prior invention was not operative, and failed to produce the beneficial results sought and produced by the patent, it could not constitute prior invention. In such case the patented invention can not be regarded as old." (General Electric Co. v. Wise, 119 Fed. 926.)

To the same effect see:

Cimotti Unhairing Co. v. American Unhairing Machine Co., 115 Fed. 500;

General Electric Co. v. Wise, 119 Fed. 926;

Underwood Typewriter Co. v. Elliott Fisher Co., 165 Fed. 928;

Barbed Wire patent, 143 U. S. 282;

Magawan v. Belting Co., 141 U. S. 332;

Hobbs v. Beach, 180 U. S. 383;

Paper Bag Case, 210 U. S. 405-416; 52 L. Ed. 1122-1127.

As said by the Circuit Court of Appeals of the Sixth Circuit, in Loew Filter Co. et al. v. German-American Filter Co. of New York (164 Fed. 855-860, C. C. A. Oct. 16, 1908):

> "It is not competent to read into a publication relied on as an anticipation of a subsequent patent information which it does not give, nor by expert opinion explain an otherwise uninforming statement by evidence of some apparatus or article not itself competent as an anticipation."

If the defense considers this Mack patent their best reference we are unable to see wherein it invalidates or limits the Ray patents in suit.

As said by Judge Hand in Asbestos Shingle, Slate & Sheathing Co. v. H. W. Johns-Manville Co., 184 Fed. 620, 626:

> "* * * the art must be enriched by more than fruitful intimations, untested suggestions, or pregnant surmise before the subsequent comer

who has elaborated and proved the invention may be deprived of his right."

HAMMAN PATENT NO. 563,483, JULY 7th, 1896 (DEFENDANT'S EXHIBIT K), AND NO. 799,560, SEPT. 12th, 1905 (EXHIBIT P).

Whaley says (R. 194-5):

"The Hamman and Voegeli patent is merely a forced draft fan for blowing air in over a coal fire to supply a forced draft. It has nothing to do with the burning of oil."

* * * * * * *

"The Hamman patent, No. 799,560, is simply an induced draft apparatus. It has nothing to do with the burning of oil at all, simply a fan actuating a steam turbine. That fan would have to be used as a forced draft apparatus instead of induced draft apparatus."

On cross-examination DeLaney testified (R. 126-7):

"XQ. Now, in the Hamman patent, No. 563,483, that is not an oil burner device at all?

A. No.

XQ. It is simply a so-called smoke consumer?

A. That is all."

And again (R. 128-9):

"XQ. Hamman, No. 799,560, that is merely an air blower, turbine air blower, is it not?

A. Yes.

XQ. And is not the term 'induced draft' improperly used in the patent there? It really ought to be 'forced draft,' shouldn't it?

A. In either way.

XQ. That is a turbine forced draft apparatus?

A. Yes, *turbine forced draft apparatus.*

XQ. There is no oil burner of any kind shown?

A. No."

THOM PATENT NO. 668,236, FEB. 19, 1901 (EXHIBIT I); ANDERSON PATENT NO. 719,716, FEB. 3, 1903 (EXHIBIT M); GIBBS PATENT NO. 752,900, FEB. 23, 1904 (EXHIBIT N); GORDEJEFF PATENT NO. 764,718, JULY 12, 1904 (EXHIBIT O); JOHNSON PATENT NO. 1,009,525, NOV. 21, 1911 (EXHIBIT Q); GORDON PATENT NO. 1,085,334, JAN. 27, 1914 (EXHIBIT T).

These patents are so entirely irrelevant that they may be disposed of *en bloc.* Concerning them Whaley says (R. 195-5):

"The Thom patent is a patent merely for making a pipe-line flexible with several joints. It is a jet type of burner, as far as the burner goes, and has no relation to this type of burner in question.

The J. W. Anderson patent shows a jet type of oil burner, having two hinges, with the oil and steam coming through the different hinges, with a stuffing box on each hinge. The burner is a jet type of burner, and applies to an entirely foreign type of oil burner than the ones in question here.

The Gibbs patent is a vertical type of burner. The agent for atomizing the oil is entirely a flat plate, and the oil is run out on this flat plate, and the atomizing is accomplished entirely by centrifugal force. A large diameter of plate or cup must be used because to get

sufficient force on the centrifugal action only, you have a large radius, because the centrifugal force is directly proportional to the square of the radius.

The Gordejeff patent is simply a jet type of oil burner, and not comparable with this type of burner in question at all. This Gordejeff patent has swivel joints on the pipe-line leading to the burner."

* * * * * * *

"The S. F. Johnson patent has a fan with a number of blades or fingers on it, and the oil is sprayed against these blades and blown into the furnace. This device would not be successful. It is apparent to everyone familiar with oil burning that the device would not operate and is not comparable in any way with the two devices in question."

* * * * * * *

"The Gordin patent has a fan device for atomizing the oil which is splashed on the blades of the fan vertically, and not in any way comparable with the oil burners here in question."

We quote from DeLaney's cross-examination on these patents simply to show the careless manner in which he testified and his misuse of terms. Thus (R. 127-8):

"XQ. Now, in Gibbs, 752,900, I understood you say that this had a cup. Will you indicate what the part is that you would call a cup?

A. I *would call M a cup.*

XQ. That is nothing but a straight, flat disc, is it?

A. It is a rotary or atomizing plane.

XQ. It is a plane horizontally disposed disc with an oil feed up through the middle?

A. Yes.

XQ. Not a cup at all?

A. *No, it would not be called a cup.*

XQ. I had an idea that your use of that was inadvertent in calling it a cup. This is driven by a steam turbine, is it?

A. Yes."

* * * * * * *

"XQ. What would be the character of the flame that might be produced in this Gibbs burner with this horizontal blade M: wouldn't that be more or less of a saucer shape?

A. It would be a flaring saucer, you might call it, not a flat plane, but a plane that would be possibly an angle of 30 degrees.

XQ. Not like the flame that either the defendant or the plaintiff has?

A. *No, neither one.*" (Italics ours.)

(R. 129):

"XQ. Referring to *Johnson, No. 1,009,525,* of November 21, 1911, is that anything more than a mere paddle wheel, looking at Fig. 2, revolving in a casing, and that the oil is brought by pipe 57 against the blade of the paddle wheel and broken up in that way?

A. Yes.

XQ. And mixed with whatever air comes along the conduit?

A. Yes."

DIFFERENT TYPES OF VERTICAL ROTARY BURNERS.

Attention has previously been called to the differences in principle between so-called horizontal rotary burners and vertical rotary burners.

One outstanding difference is in the shape of the flame. All vertical rotary burners create a "saucer-shape" flame which is wholly inadequate for use under a boiler requiring a flame of the "straight-shot" or columnar type of Ray and of defendant's infringing Simplex.

Typical Rotary Burners of the Vertical Shaft Type art:

Britten, 1,022,122—April 2, 1912, (Exhibit R);
Fesler, 1,026,663—May 26, 1912, (Exhibit S);
Fesler, 1,113,108—Oct. 6, 1914, (Exhibit X);
Becker, 1,095,447—May 5, 1914, (Exhibit U);
Becker, 1,101,779—June 30, 1914, (Exhibit V);
King, 1,158,058—Oct. 26, 1915, (Exhibit Z).

Several of these patents are illustrated opposite.

Concerning them Mr. Whaley says (R. 195):

> "The Britten patent is a vertical type burner, which puts it in an entirely different class, because it works on a different principle from the burners in suit. The atomizing device is a fan blade, and not an atomizing cup at all, and works on an entirely different principle than the two burners in question.
>
> The Fesler patent is perhaps the first case of vertical type of oil burning. It operates on the principle of atomizing the oil entirely by the centrifugal force, the air supplied being for use only for combustion. The air travels in the same direction as the flow of oil from the atomizing device, and it does not assist materially in atomization, but is used only for combustion. The atomization is entirely accomplished by the rotation of the centrifugal

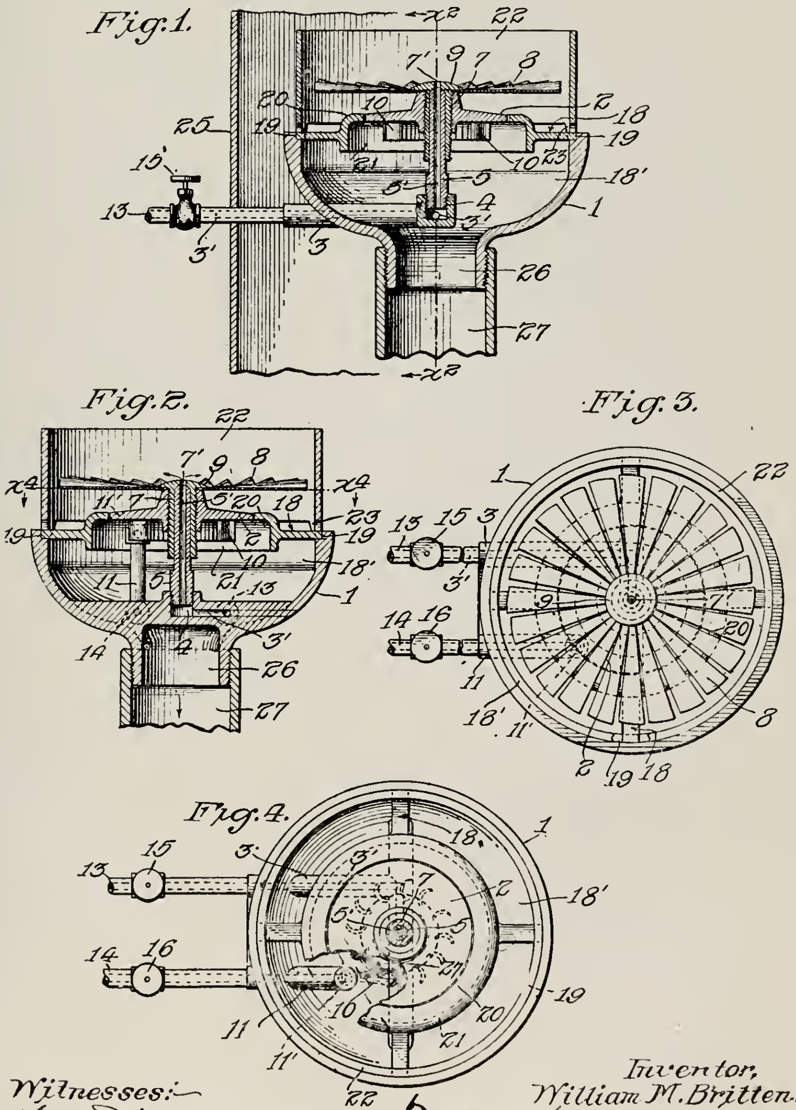
PLATE XII

W. M. BRITTEN.

ROTARY OIL BURNER.

APPLICATION FILED JAN. 25, 1909.

1,022,122. Patented Apr. 2, 1912.



Witnesses:—

C. J. Williams

Louis W. Gratz

Inventor,
William M. Britten.

by

atty.

PLATE XIII

M. A. FESLER.

OIL BURNER.

APPLICATION FILED JULY 27, 1908. RENEWED JULY 12, 1910.

1,026,664. **Patented May 21, 1912.**

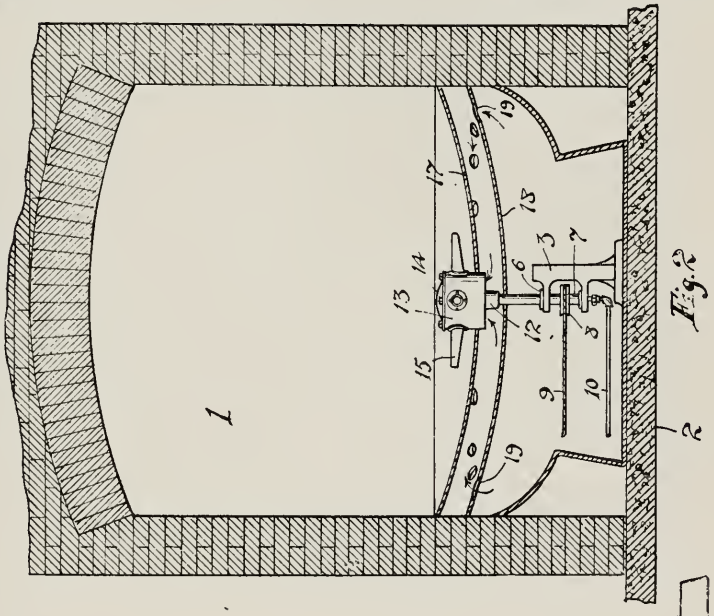


Fig. 2.

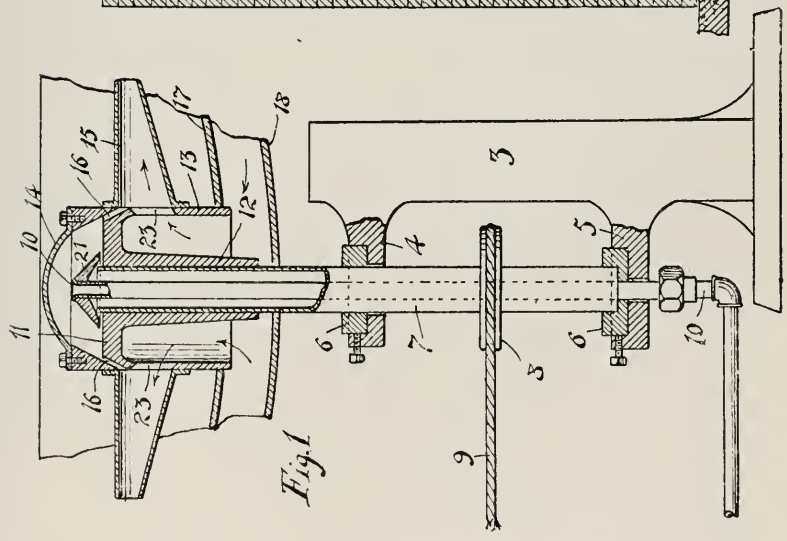


Fig. 1.

WITNESSES:

Nellie B. Keating

Geoffrey Holt.

INVENTOR,

Milton A Fesler

BY

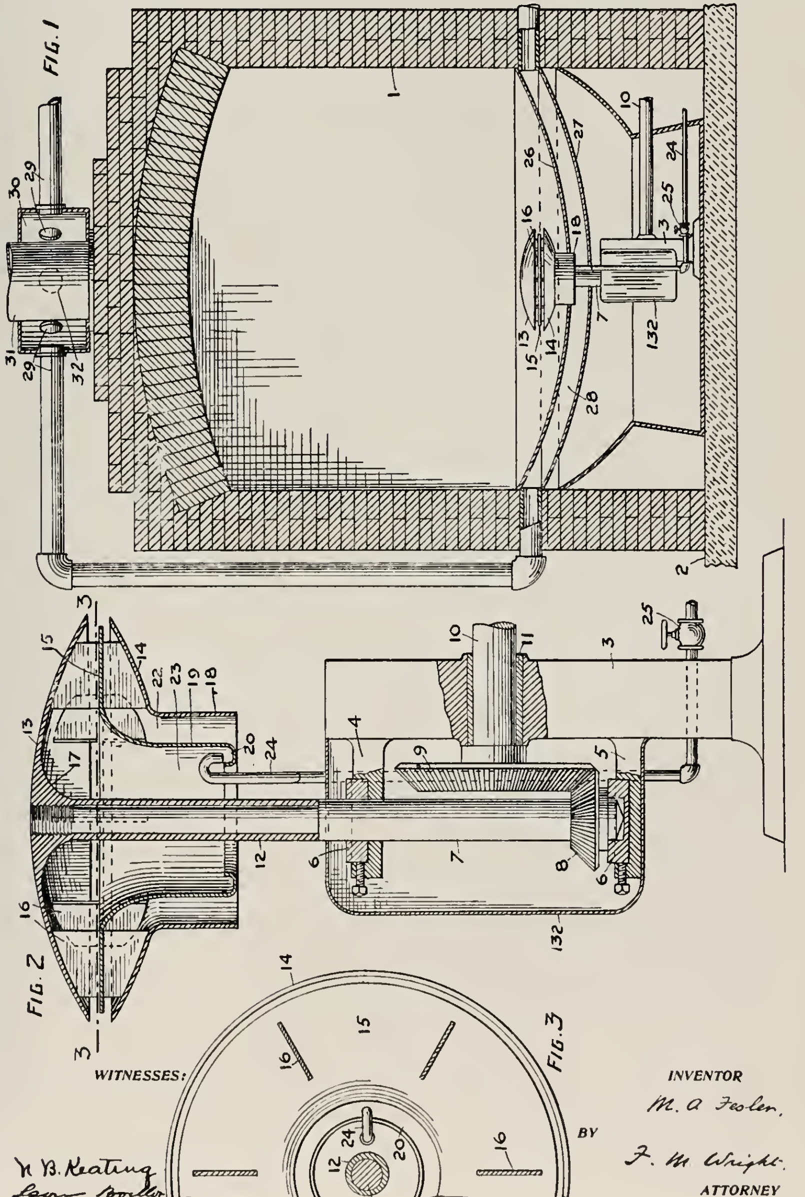
F. M. Wright.

ATTORNEY.

PLATE XIV

M. A. FESLER.
CENTRIFUGAL OIL BURNER.
APPLICATION FILED APR. 13, 1910.

1,026,663. Patented May 21, 1912.



WITNESSES:

H. B. Keating
Leon Boilr

INVENTOR
M. A. Fesler,
BY
F. M. Wright.
ATTORNEY

head. That is one of the differences between a horizontal and a vertical burner."

DeLaney says concerning the shape of the Fess flame (R. 101):

"Q. What would be the type of flame in connection with this Fesler burner, what would be the form?

A. It might be described as being saucer-shaped."

Continuing Whaley says (R. 196-197):

"The J. H. Becker horizontal burner patent shows two gears for picking up the oil and a propulsion fan behind for in theory blowing the oil which these two gears splash up into the fire-box. The device, on its surface, shows that it will not operate for any length of time, for the reason that the oil, after being picked up by the gears, will be recondensed by being blown against the inside of the tube, which converges at its front end. This condensation takes place because that if the oil after being atomized comes in contact with a cold surface it will immediately condense from a vapor into oil again. So the device is inoperable for that reason.

The J. H. Becker centrifugal burner patent No. 1,101,779 (see Plate VII, supra), is a vertical oil burner, and the oil is introduced into a rotating cup. I put more time on this because it seems to be more in point with the burners here in question.

The oil is introduced into the bottom of the cup and raised to the periphery of the cup and thrown off by the centrifugal force of its rotation. The fan is of the same diameter as

the cup, or practically so. It will not operate on the principle of these two burners in question for the reason that experiments have shown, not once but many times, that a fan of even higher velocity than this type will not blow sufficient air to catch the film of oil unless the fan is at least seven times the diameter of the atomizing cup, because the force of the oil coming off the atomizing cup is greater than the force of the air blown by the fan; of course, a very small quantity of oil or a few drops might be caught by the air from the fan, such as this. A burner of this type produces a saucer-shaped flame."

Considering the other patents Mr. Whaley says (R. 197-198):

"The M. A. Fesler patent, No. 1,113,108 is of the vertical type of oil burner, and the atomization is accomplished by the centrifugal force of the cup, and none of the air blown in is for atomization, but for combustion only. The oil from the cup makes a saucer-like flame. In this particular patent the cup is double, made of two parts, so that a large amount of oil can be atomized. That patent, however, applies to the vertical type of oil-burning apparatus, entirely different in principle from the devices in question.

The W. E. Shore patent is a superheating device for furnaces; it has nothing to do with atomization or burning of oil. It has, however, a swivel joint on the air pipe-line going to the superheater."

Continuing the witness says (R. 198):

"I might say, * * * that these differences in the method of burning oil are recognized by

everyone in the oil burning business, and they do not consider them comparable in any way. The vertical type of oil burner works on an entirely different principle from the horizontal type of burner."

DEFENDANT'S EXPERT DELANEY CORROBORATES WHALEY ON ALL MATERIAL POINTS AS TO DIFFERENCES BETWEEN PRIOR ART PATENTS ON THE ONE HAND AND THE PLAINTIFF'S PATENTS AND DEFENDANT'S INFRINGING MACHINE ON THE OTHER.

Thus (R. 129):

"XQ. Now, take Britten, No. 1,022,122, that is a water turbine type of burner, is it not?

A. Yes.

XQ. Used for small installations in stoves and the like?

A. Yes.

XQ. And the water is admitted through the pipe 14: Is that correct?

A. Yes.

XQ. The oil supply pipe is 13, and water supply pipe is 14?

A. Yes.

XQ. By means of this water jet through pipe 14 impinging against a turbine wheel, you set the little spreader blade 8 in motion?

A. Yes.

XQ. And some air current is induced?

A. Yes.

XQ. That is not a cup in any sense?

A. No, it is not."

Continuing (R. 129-130):

"XQ. It is simply a flat head corrugated. Coming to Fesler, 1,026,663, is it not a fact

that in this type of apparatus and also in the Becker patent here, defendant's predecessors, the atomization is shown to be largely by centrifugal force, and not by any mechanical action?

A. In Fesler, yes.

XQ. I see that is emphasized in lines 75 to 92 of his specifications. In Fesler there was produced a substantially saucer-shaped flame?

A. Yes.

Q. I believe that was illustrated in a pamphlet that was introduced?

A. Yes, sir."

DEFENDANT'S EXPERT DISTINGUISHES BETWEEN FESLER AND BECKER AND KING AND DRAWS FINE DISTINCTIONS BETWEEN DIFFERENT SHAPES OF CUP WHICH GO TO DISPROVE ANTICIPATION OF PLAINTIFF'S PATENTS.

Thus testifies Mr. DeLaney on cross-examination (R. 130-131):

"XQ. In connection with Fesler I call attention to the Becker patent, 1,101,799, of June 30, 1914: Would not that show that the Becker type of apparatus there and the Fesler type just referred to were quite alike?

A. No.

XQ. They were both vertical rotary centrifugal burners, were they not?

A. That is, they both have the rotating cup and the fan on the same shaft, but the angle of the cup is entirely different.

XQ. There is some variation, you would say, in the angle of the cup?

A. In the angle of the cup, and the angle of the discharge nozzle.

XQ. In what way do you mean?

A. On Becker's patent the air is discharged almost parallel to the shaft that carries the cup, diverging off only a few degrees, and that is all.

XQ. You recall that the Becker device, as constructed, produced likewise a saucer-like flame?

A. That would depend entirely on the speed at which they carry the fan.

XQ. In actual practice, the burners which the American Standard Company manufactured did produce a saucer-like flame very much like the Fess flame, did they not?

A. No, it was straighter.

XQ. Your recollection is that it was straighter?

A. Yes. On the Fess, the oil is at right angles to the shaft, and on the Becker it is going up considerably.

XQ. I will show you an enlargement, from the defendant's predecessor's catalog or about that time, in which you can see one of the defendant's predecessor's vertical rotary burners with a saucer-like shaped flame; you recognize that, do you not?

A. Yes, that is King's patent.

XQ. You believe that that is the King patent?

A. That is the King patent.

Mr. TOWNSEND. I ask that this first enlargement I have referred to be marked Plaintiff's Exhibit 16. That same cut, your Honor, appears in the little circular the defendant offered."

(This circular referred to is defendant's Exhibit DD and the cut as it appears at page 3 is reproduced as plate VIII, supra.)

DELANEY ADMITS THAT BECKER ALSO PROJECTED A SAUCER-SHAPED FLAME.

(R. 131-132):

"XQ. I show you an enlargement taken from one of the defendant's predecessor's catalogs of a Simplex standard rotary, marked 'Patented June 30, 1914', and I ask you if you recognize that, either from the Becker patent or a Standard Simplex burner of approximately that date?

A. That is the King.

XQ. You believe still that that is the King design? That does not, however, correspond with the King patent, does it?

A. No.

XQ. Do you know what patent it does correspond to?

A. Becker's.

XQ. Does not that show a saucer-shaped flame?

A. It does." (Offered as Exhibit 17, R. 132.)

Continuing (R. 132-133):

"XQ. When you say the King design, you refer to the King patent of October, 1915, which is in evidence and set up in the defendant's counterclaim?

A. Yes, sir."

* * * * * * *

"XQ. What other distinguishing features would you say King has over Becker other than in the omission of the cover to the cup?

A. The direction or angle of the atomizing cup or edge of the periphery of the blade.

XQ. In what respects, and in which?

A. On the King the atomizing blade is at right angles to the shaft, throwing your oil at right angles to the shaft, a straight, rotary di-

rection; in the Becker patent the oil is led off, you might say, like a bell, a short chime on a bell; the current of air is parallel to the sides of that cup, it only diverging by a slight angle.

XQ. What effect would that have?

A. It will throw a comparatively straight fire, almost a pillar of fire.

XQ. In other words, you believe that the Becker device, as shown in this patent of June 30, 1914, is capable of giving a flame that is of deeper saucer-like character than the King?

A. *By giving sufficient speed on that fan, you can throw a pillar of fire.* The stronger the current of air the straighter the fire would be." (Italics ours.)

The cut (Exhibit 17) contradicts Mr. DeLaney flatly as to the shape of the Becker flame. Mr. Whaley has shown the fallacy of Mr. DeLaney's reasoning by pointing out that the Becker device in fact does throw a saucer-shaped flame and that any attempt to speed up the small diameter fan of Becker to have any appreciable effect would merely result in a *slip of the fan blades* through the air and nullify the action entirely.

LIMIT OF FAN SPEED REACHED WHEN FAN SLIPS OR CUTS THROUGH THE AIR.

Mr. Whaley refutes Mr. DeLaney's theory that the Becker Vertical Burner cup and small peripheral blades could be driven fast enough to deflect the oil thrown off the cup by centrifugal action (R. 197):

Mr. Townsend. Q. What have you to say about Mr. DeLaney's suggestion yesterday if you ran that fan fast enough you might get an air draft that would do that?

A. There is a limit beyond which you cannot drive a fan, because the efficiency of a fan is immediately lowered as soon as the critical speed is exceeded, which means that the fan, at this high speed, would *merely slip around in the air* and not discharge any large quantity of air. This fan of that diameter could not be driven at high enough speed to atomize a film of oil thrown from a cup of this large diameter, unless the delivery of the air were of such tremendous volume that it would blow out the fire, because that type of fan delivers a *large volume and a small pressure.* The reason the fire is blown out by a large volume of cold air is that the temperature of the combustion chamber or flame is lowered below the point of combustion." (Italics ours.)

Continuing, however, with Mr. DeLaney, the differences between the Fesler, Becker and King, on the one hand, and Ray and the infringing Simplex on the other, is accentuated (R. 133-134):

"XQ. Referring to Fesler, No. 1,113,108, what have you to say in comparison with the distribution of oil and the form of the flame, either compared with the Becker patent or the King patent?

A. It is on parallel lines to the King patent.

XQ. It is more like the King?

A. Yes, sir.

XQ. In other words, it produces a more or less true saucer-like flame?

A. Yes, sir.

XQ. Now, referring to Becker, 1,095,447, of May 5, 1914, what part did you refer to when

you spoke of a centrifugal oil distributor as being on the same shaft with the fan?

A. I should possibly have said 'mechanical distributor'.

XQ. Then that was not an apt term to use in that regard?

A. No.

XQ. As a matter of fact, all the Becker patent does is to create a blast of air by the fan, 8, to pick up such particles of oil as may be splashed up by the splashing gears, 4, 6: Isn't that right?

A. Yes.

XQ. You have no knowledge of any such device as this Becker patent ever having been put into use, have you?

A. No."

DELANEY ADMITS FESLER DIFFERENT IN PRINCIPLE FROM RAY AND INFRINGING SIMPLEX BUT SEEKS TO MAINTAIN SIMILARITY BETWEEN BECKER AND RAY AND SIMPLEX.

(R. 135-136):

"XQ. Do I understand, Mr. DeLaney, that you class the Fesler patents and the plaintiff's patents in suit as being the same principle in mode of operation, the same general type or specific type?

A. Which do you mean?

XQ. The Fess steam pipe patents which are in evidence, and the plaintiff's patents.

A. No.

XQ. You do not put those in the same category?

A. No.

XQ. Neither, I suppose, do you put the Becker patents in the same category with the plaintiff's patents?

A. I would.
XQ. You would?
A. Yes, sir.
XQ. Although they are vertical burners with the tops or covers on the oil-distributing cups?
A. Yes.
XQ. In what way?
A. Because the lines of Becker's cup and the lines of his nozzle controlling his air discharge would permit of the burner carrying a pillar of fire, developing a pillar of fire.
XQ. Your opinion is that so far as certain results may be accomplished in Becker, that those two are alike?
A. Yes.
XQ. I mean Becker and the plaintiff's?
A. Yes.
XQ. Do you consider that they are alike as to construction in the use of a fan of relatively large diameter, high velocity type?
A. You can get your velocity from a smaller fan by giving it the speed."

But note what Whaley says supra about "slippage" when the fan is speeded beyond its effective limits.

"XQ. Do you consider that the Becker patents and the plaintiff's patents are alike in any respect whatsoever, except that you believe Becker can produce a flame approaching a pillar of fire?
A. Yes.
XQ. In what respect do you think they are alike?
A. Because the angle of the cup and the angle of the air discharge nozzle with the fan rotating at sufficient speed to give you the requisite velocity of your air would give you an elongated or pillar of fire."

But Becker does not show or describe any such mode of operation nor is it capable of being so operated except to produce a saucer-shaped flame as seen in the cut of Exhibit 17, supra.

DEFENDANT EVADES THE "BEST REFERENCE TEST".

Defendant can point to no patent in the prior art included in the 30 odd patents relied on by it that is any better or closer as a reference than any other of these several patents.

Thus DeLaney on cross-examination says (R. 116-117):

> "XQ. Now, we have had reference made to a number of patents which you have run through for the defendant's counsel. Which one of the patents of all of the patents you have referred to do you consider the nearest approach to the plaintiff's patents in suit, or either of them?
>
> A. Well, *there are many comparable points* in a number of them.
>
> XQ. My question is, I am asking you now, which is your one best reference that you can refer to against either of the Ray patents, or as against each of them?
>
> A. *I cannot see that there is any particular one.*
>
> XQ. Of the 20-odd patents or so you are not able to pick out any one as standing out pre-eminently above the rest as being an approach, a counterpart to the plaintiff's patents?
>
> A. There are a number of them there that have the same principles involved.
>
> XQ. That is not an answer to my question, Mr. DeLaney, and I am not admitting the mat-

> ter of principle and similitude, but can you pick out, if not one, can you pick out a distinct patent by date and number which you will say would be your best art?
> A. *No.*" (Italics ours.)

If the expert had consented to narrow the issues as could readily have been done, and should have been done, the work of this Court would have been materially lessened.

See Waterbury Co. v. Aston, 183 Fed. 120 (2nd C. C. A.), where Judge Coxe remarked:

> "That the patent is not anticipated is conceded by the defendant's expert. He says:
> 'If you wish me to find a single illustration in any single reference which exactly agrees in all particulars with the device of the patent in suit I am free to state that I do not find it and I do not think there can be anything found in my previous testimony to the effect that I have claimed to find it.' "

But there the expert did designate his best reference and the Court said:

> "*It seems necessary, therefore, to examine only the La Chappelle patent.*"
>
> * * * * * * *
>
> "Evidently the patentee did not have the Peller *concept*. His was not a rustless buckle and was not designed to be such. A person skilled in the art, familiar with the complainant's buckle might, by removing the hooked part, reconstruct the La Chappelle device so that it would accomplish in an awkward manner the same result as Peller, but this is not

enough. *A patent cannot be invalidated by a structure which can only be altered into an anticipation by the use of inventive skill.*" (Italics ours.)

The further pertinence of this inquiry of DeLaney was to emphasize novelty in Ray. The fact that the defendant's expert was forced to concede that no one of the twenty-seven or more patents offered in evidence by the defendant to defeat Ray was, in fact, better than any other for comparative purposes: "I cannot see that there is any particular one."

THE QUESTION OF INVENTION AND MECHANICAL EQUIVALENCY IS OFTEN DETERMINED BY CONSIDERING WHETHER THE INFRINGING DEVICE IS MORE LIKE THAT OF THE PATENT IN SUIT THAN THOSE DEVICES CLAIMED TO ANTICIPATE THE PATENT.

The National Hollow B. B. Co. v. Interchange B. B. Co., 106 Fed. 699;

Dowagiac Mfg. Co. v. Minnesota Moline Plow Co., 118 Fed. 136, C. C. A.

In the present instance the evidence is all to the effect that the only horizontal rotary oil burners embodying the patented combinations are those of the plaintiffs and defendant.

In Dowagiac Mfg. Co. v. Minnesota Moline Plow Co., 118 Fed. 136, it is said at page 141:

"*This question of mechanical equivalents is often well determined by considering whether the infringement is nearer to the patent in suit*

in its construction and means than those devices which are claimed to anticipate the patent. When this test is applied, it is perfectly plain that the new structure of the defendants more closely imitates the means used by Hoyt to accomplish the desired purpose, than anything found in the art prior to the patent to Hoyt. There is nothing in the prior art that comes anywhere near so close to an imitation of the complainant's combination. Indeed, it is very plain that defendants' new structure would never have existed, if Hoyt had not taught how to make it. It not only operates the principle in the same way that Hoyt did, but it uses plain mechanical equivalents for every essential element of Hoyt's combination. (Italics ours.)

Again we are reminded that:

"Where, upon suit for infringement, alleged anticipating constructions are set up by the defendant, the fact that he *appropriated the complainant's production as the foundation of his own business and had been very successful, is persuasive evidence* of the advantages of the complainant's structure over the alleged anticipatory constructions." (A. R. Milner Seating Co. v. Yesbera, 133 Fed. 916, (6th Cir.). (Italics ours.)

THEORETICAL MODIFICATIONS OF THE PRIOR ART ARE NOT PERMISSIBLE UNDER THE LAW TO MAKE OUT ANTICIPATION.

As your Honors said in the case of Los Alamitos Sugar Co. v. Carroll, 173 Fed. 280:

"It is not sufficient to constitute anticipation that the devices relied upon might by a process

of modification, reorganization, or combination with each other, be made to accomplish the function performed by the device of the patent sued on."

In speaking of this rule of law, the Court, in the case of Western Electric Co. v. Howe Tel. Co., 85 Fed. 656, said:

"The force of this ruling and the similar ruling in Clough v. Barker, 106 U. S. 175, is made manifest in its practical application to the rights of parties, by the reflection that all earlier patents set up in defense against a later patent sued upon are but the record of evidence of the status the art has reached. The rights under such later patent are subject to what this record evidence actually shows. *To change this record by permitting theoretical modifications of these earlier patents, would be the same in principle, as to change, by interpolation or modification any other evidence between the parties.*" (Italics ours.)

"A patent cannot, as an anticipation of a later patent, have implied into it from necessity more than it fairly shows to make it represent an operative structure. What is required and not so shown is left for later inventors."

Wirt v. Farley, 84 Fed. 891.

PRESUMPTION OF VALIDITY STRENGTHENED BY CITATION OF LARGE NUMBER OF PATENTS BY DEFENSE.

"The citation of a large number of patents as anticipation, tends to strengthen rather than weaken the patent sued upon, by showing that the trade had long and persistently been seek-

ing in vain what the complainants finally accomplished." (Forsyth v. Garlock, 142 Fed. 461, 463.)

"Forty-odd reference patents were not needed to prove that Dean was not a pioneer in the telephonic art, that he did not originate the granular-carbon type of transmitter, and that he was not the first to provide a means for preventing the packing of the granules. * * * The novelty of none of the claims is gainsaid by *any single prior patent or structure;* but *collectively* the references establish that all of the elements broadly considered, which Dean used in making up his combination, *were old and were commonly used* in transmitter construction. * * * but the concept of such a unitary structure was not *obviously* taught nor foreshadowed by anything in the prior art." (International Tel. Co. v. Kellogg Switchboard Co., 171 Fed. 651, 653-654, (C. C. A.). (Italics ours.)

Gandy v. Main Belting Co., 143 U. S. 556;

DuBois v. Kirk, 158 U. S. 58;

Hancock v. Boyd, 170 Fed. 600;

Novelty Glass Co. v. Brookfield, 170 Fed. 946.

DEFENSES OF ALLEGED PRIOR USES AND PRIOR INVENTION.

Under this defense some indifferent testimony was offered by defendant to show:

Prior use by one G. E. Witt Co.

Prior invention by one J. H. King, patentee of the King 1915 patent.

THE WITT SO-CALLED PRIOR USE.

Defendant called as a witness a Mr. Leland (R. 164) to show that a concern known as the G. E. Witt Company (now defunct) had put out a Rotary Burner and installed one in the Stanford Court Apartments "about October, 1914". No records of any sort were offered to fix this date nor does this witness describe the burner, nor does he know anything of its subsequent history (R. 166).

Defendant offered a bulletin of the Witt Company (Exhibit HH (R. 165)) and a fragment of a device (Exhibit II-R. 166) to support this alleged defense of prior invention or prior use. Objection was made to receipt in evidence of the Witt publication (R. 165):

> "Mr. Townsend. We object to the publication as not sufficiently proved.
>
> The Court. I am rather inclined to think so."

As to the lack of weight to be given to the testimony of this witness in a defense of this sort we have only to quote his brief cross-examination in full (R. 166-167):

> "Mr. Townsend. XQ. This piece of metal just shown you, Mr. Leland, and in evidence as Exhibit 'II', do I understand you to say that is the same head that was in the apartment at that time?
>
> A. No, I could not say that.
>
> XQ. You don't know where this particular device came from?
>
> A. No.

XQ. Do you know what happened to that burner that was put in that place?

Mr. WHITE. Objected to as not proper cross-examination.

A. No, I do not.

The COURT. It is cross-examination. It may be preliminary. He may proceed briefly.

A. No, I do not.

Mr. TOWNSEND. XQ. Did you see it subsequently at any time to the date of October, 1914?

A. I could not say as to that date, but not recently, in any event.

Mr. TOWNSEND. That is all.

The COURT. I understand you are a consulting engineer; of what profession or vocation?

A. Consulting mechanical engineer."

THE WITT DEVICE A FAILURE—ALSO SUBSEQUENT TO RAY'S INVENTION.

Although the Witt device fails completely as an anticipation even if proven and shown to be earlier than Ray, which it is not, plaintiff in rebuttal called a Mr. Barley, a former associate of Witt to show the history of the Witt burner. His testimony is not only uncontradicted but is entitled to full credit.

Barley was shop foreman in the Witt shops from 1909 to 1917 or 1918 (R. 171). Concerning the burner testified to by Leland Barley, he says (R. 171):

"A. Well, I know that it was a failure. We built some, and they were installed and were taken out, not working properly. In fact, I do not believe there was one job that I can remember of that they received payment for.

Q. How soon was that failure discovered?

A. Immediately after they were put in and the fire was started we had trouble with the shaft warping, and the fire burning out against the front, and holes in the back of the casing filling up with carbon, and running over the back of the atomizer, and out the furnace front."

WITT FLAME A SAUCER-LIKE FLAME.

As to its objection Barley says (R. 172):

"Well, it threw a saucer-shaped flame practically straight out from the end of the burner. That was our trouble, trying to get it burn ahead; instead of that it would throw out on the side walls."

On cross-examination of Mr. Barley he says (R. 173):

"XQ. Do you know anything about the Matsonia burner of this type which was installed in 1914 by Mr. Sly and referred to by him in this letter of September 18, 1914?

A. The only recollection I have of the Matsonia, is the burner was thrown out."

* * * * * * *

"XQ. How do you know they were thrown out?

A. Because they came back to the shop."

* * * * * * *

"XQ. How many years after the installation?

A. I don't think it was years, I think it was months.

XQ. After the operation of these burners for some months, was not the only change made in the burner head increasing the sizing of

these perforations so as to facilitate the passage of the oil from the rearwardly projecting flange into the front of the burner?

A. I will tell you, the changes were so fast and furious I could not keep track of them."

This taken with Mr. Ray's account of the development of his invention early in 1914 completely disposes of the Witt defense.

THE KING 1911 EXPERIMENTAL DEVICE AND DRAWING.

The evidence shows conclusively three things each favorable to plaintiff, and this is shown by defendant's own witnesses King and Becker, even according them fullest credibility, which they are not entitled to, particularly King.

(1) The 1911 contraption was merely an abandoned experiment.

(2) At best it does not disclose the Ray concept nor patented combination, because among other things it is for a *propulsion* type of fan and has no diaphragm and entirely fails to show the features of the second Ray patent.

(3) Its use here is a desperate attempt to anticipate the Ray patents on the ground of *prior invention,* but its only effect is to emphasize the fact that there is something of real merit and patentable discovery in the Ray device.

KING AS AN ABANDONED EXPERIMENT.

Mr. King's account of his 1911 operations is best told in his own language; keeping in mind his apparent bias and effort to make the Court think that the success or practice of his experiments were very much more extensive and favorable than they really were.

King's story in brief is as follows, beginning (R. 140):

> "In the early part of 1911 I bought from Mr. Julius Becker a half interest in what was then known as the water method oil-burning patent."*
>
> * * * * * * *
>
> "The American Heat & Power Company was formed and the patents turned over to them, and from that time on until some time in 1915 I was connected with the oil burner business."
>
> * * * * * * *
>
> "Q. State whether or not prior to March 20, 1914, the American Heat & Power Company was manufacturing and selling here in California the burner disclosed in this Bulletin No. 1, which has been marked Defendant's Exhibit 'DD.'
>
> A. To the best of my knowledge they were."

---

*Previously herein as Plate V appears a reproduction of the cut on page 99 of Exhibit "GG", which shows the so-called "water method" oil burner referred to by the witness. Obviously this burner was simply an oil feed pipe with a gooseneck from which dropped oil, together with some water, upon a splash plate arranged in the fire box.

This was in fact the basis of defendant's predecessor's business until a year or two later when the American Heat & Power Company came out with the Becker vertical rotary head burner, illustrated in the Becker patents (Plate VII, supra) and in imitation of the then well-known vertical rotary head burners of the Fess System.

King later took out a patent (see Plate XV, post), in which he merely omitted the protective cover 15 of Becker (see Plate VII, supra) and slightly accentuated the flare of the cup so as to *retard* the oil flow.

Continuing King says (R. 140-141):

"In 1911 Mr. Becker and myself made and operated a straight-shot rotary oil burner, having a motor, a fan, a pump, and an atomizing cup, and a means for getting the oil into the cup and returning the surplus to the tank.

Q. What use was made of that device?

A. We were making a test of the principles involved.

Q. What became of that device?

A. The model was made, tested, and the principle involved, or, rather, the principles involved, proven to our satisfaction. We certified to this experiment or test before a notary, put the model away, and continued with the work in which we were engaged, intending at a later date, when our business would permit, to put them into production."

But says Walker (Section 91):

"A delay of years, between reduction to practice and filing an application for a patent, which is taken for the purpose of profiting, first from secrecy, and finally from a patented monopoly, is a delay which constitutes actual abandonment, even if the inventor intended to apply for a patent, when he could maintain secrecy no longer."

Witness then identifies the drawing Defendant's Exhibit "EE", saying (R. 141):

"A. I made the drawing, I signed the drawing in the presence of three witnesses on the 3rd day of August, 1911, and signed the affidavit attached.

Q. In connection with the device which you have just described as having been made by you, what does this drawing illustrate?

A. It illustrates a motor, and a pump, and a fan, and the atomizer—

The COURT. Q. Did I understand you to say you patented this?

A. We did not get a patent out at that time."

As a matter of fact they never patented it.

Witness' description of the drawing is as follows (R. 142-143):

"The atomizing cup was made in the form of a deep cup, the oil admitted at the rearward end; the shape and pitch of the side walls being designed in such a manner as to retard the flow of the oil from the point of intake to the point of discharge a sufficient time so that the absorption of reflected heat would reduce the viscosity of the oil and cause the point of ignition to take place immediately upon the discharge from the periphery."

EXPERIMENTAL DEVICE TESTED AND PUT AWAY AND FORGOTTEN UNTIL THE EMERGENCY OF THIS SUIT AROSE.

King says (R. 143):

"Q. Where was this device kept after these tests made by you in 1911?

A. It was put with our models at that time and subsequently in the vault."

In Coffin v. Ogden, 18 Wall. 120, 21 L. Ed. 821, the Supreme Court said:

"If the thing was embryotic or inchoate; if it rested in speculation or experiment; if the process pursued for its development had failed

> to reach the point of consummation, it cannot avail to defeat a patent founded upon discovery or invention which was completed, while in the other case there was only progress, however near that progress may have approximated to the end in view. The law required not conjecture but certainty. Until his work is done, the inventor has given nothing to the public."

Model offered as Defendant's Exhibit "FF" (R. 144):

> "The COURT. Q. Is all of it here?
> A. All of it except the motor and the fan. A conventional motor and a conventional fan were used."

(Manifestly neither Ray nor defendant in its infringing devices uses anything like "a conventional fan". That admission alone of the witness is sufficient to destroy the 1911 King idea, whatever it was in actuality as a reference.)

DRAWINGS AND MODELS, PARTICULARLY FOR ANTICIPATION PURPOSES, NOT EVIDENCE OF INVENTION SO AS TO DEFEAT THE REGULARLY ISSUED PATENTS OF PLAINTIFFS.

Walker on Patents says (Section 61):

> "Private drawings may be mislaid or hidden, so as to preclude all probability of the public ever deriving any benefit therefrom; and even if they are seen by several or by many, they are apt to be understood by few or by none. Models also are liable to be secluded from view and to suffer change, and thus to fail of propagation.

Moreover, if a patent could be defeated by producing a model or a drawing to correspond therewith, and by testifying that it was made at some sufficiently remote point of time in the past, a strong temptation would be offered to perjury. Several considerations of public policy and of private right combine, therefore, to justify the rule of this section."

In Odell v. Stout, 22 Fed. 159, 165:

"It is settled that 'an invention relating to machinery may be exhibited either in a drawing or in a model, so as to lay the foundation of a claim to priority, if it be sufficiently plain to enable those skilled in the art to understand it.' Loom Co. v. Higgins, 105 U. S. 594. But this rule is to be taken with proper qualifications. Drawings may carry date of invention back *if reasonable diligence is shown.* Kneeland v. Sheriff, 18 O. G. 242. Making drawings of an idea is not invention, and is of no effect unless followed up. Draper v. Potemaka Mills, 13 O. G. 276. Merely making drawings is not such an embodiment of invention as will defeat a subsequent patent. Ellithorp v. Robertson, 4 Blatchf. 307. The reasons for this qualification of the rule are well stated in section 61, Walker on Patents.

"Between the date of the last drawing made by Odell and his application for a patent there was an *interval of a year.* In the meantime the Daverio American patent, the Poole, the Poole & Miller, and the Gray patents were issued. All these are in evidence for the defendants. *The drawings made by Odell cannot be recognized as giving priority* to his invention as against those patents, whatever might be their effect upon the decision of the question of want of novelty if

those patents had not been issued. So far as the complainants are concerned, the defendants are not precluded by Odell's drawings from using any mechanism covered by any of the patents issued between the dates of the drawings and the date of Odell's application for his original patent." (Italics ours.)

In Pennsylvania Diamond-Drill Co. v. Simpson, 29 Fed. 288, another case cited by Walker, the Court said (290-291):

"After completing their invention, Ball and Case were prompt to apply for letters patent, and by the Sullivan Machine Company, their assignee, were *commendably diligent in furnishing the public with machines* equipped with the device. As against the Ball and Case patents, then, will the law adjudge priority of invention to Allison? The answer is not doubtful under the authorities. *In a race of diligence between two independent inventors, he who has first perfected and adapted the invention to actual use is entitled to the patents.* Agawam Co. v. Jordan, 7 Wall. 583; Whitely v. Swayne, Id. 685. Here, Allison, it would seem, was the first to conceive the invention; but mere conception, which is not seasonably followed by some practical step, counts for nothing as against a subsequent independent inventor, who, having complied with the patent laws, has obtained the patent. *It would indeed be a strange perversion of the purpose of the patent laws if one who had conceived of a new device, and proceeded so far as to embody it in rough sketches, or even in finished drawings, could there stop, and yet hold that field of invention against all comers for a period of 12 years. The law does not so reward supineness.* Hence, in Reeves v. Keystone Bridge Co., 5 Fish. 456, 463, Judge McKennan

declared the established rule to be 'that *illustrative drawings of conceived ideas do not constitute an invention,* and that, unless they are followed up by a *seasonable observance* of the requirements of the patent laws, they can have no effect upon a subsequently granted patent to another.' And this principle was enforced by Mr. Justice Matthews in the more recent case of Detroit Lubricator Manuf'g Co. v. Renchard, 9 Fed. Rep. 293, although the antedating drawing there exhibited a perfect machine in all its parts." (Italics ours.)

Automatic v. Pneumatic, 166 Fed. 298.

"In Agawam Company v. Jordan, 7 Wall. 583, 602, 19 L. Ed. 177, the Supreme Court said:

"'The settled rule of law is that whoever first perfects a machine is entitled to the patent and is the real inventor although others may have previously had the idea and made some experiments towards putting it in practice. He is the inventor and is entitled to the patent *who first brought the machine to perfection and made it capable of useful operation.*" (Italics ours.)

THE KING 1911 CONCEPT DIFFERENT IN PRINCIPLE FROM RAY.

Mr. Whaley says (R. 199-200) referring to model Exhibit "FF":

"A. I can say this in regard to this device, as an oil burning device, that it must rely upon the action of the cup for the atomization of the oil, for the reason that a fan of the type shown and of the diameter that would go in here, compared to the diameter of the atomizing cup—"

* * * * * * *

"The diameter of the fan that would go in the casing shown in model Plaintiff's Exhibit 'FF' is so small that it would be impossible for it to deliver enough air at sufficient pressure to atomize oil thrown from the periphery of an atomizing cup of the large diameter shown in plaintiff's Exhibit 'FF'. This type of fan shown on the sketch marked Exhibit 'EE' is of a *propulsion type,* which will deliver a large volume of air at very low pressure, and could not at any velocity supply sufficient air to atomize the oil thrown from a cup of the size in the model 'FF'. The atomization of the oil in this model would, for that reason, have to rely entirely upon the centrifugal force of the rotation of the cup, and, therefore, it is not comparable with either of the devices of the plaintiff or defendant here in question."

* * * * * * *

"This *device has no diaphragm or fan casing* along the same line as the defendant's device or the plaintiff's device, and *should they put a diaphragm with this type of fan it would utterly defeat the object of the fan,* because this *is not a centrifugal blower fan,* it is a propulsion fan that throws a blast of air *in line with the axis of rotation.* The *centrifugal blower* such as used here in the device in question throws a blast of air in a *direction normal to the axis of rotation.* If you put a diaphragm in front of that propulsion fan it would utterly defeat the object of that fan.

Q. I understand that drawing EE shows no diaphragm?

A. No, there is no diaphragm shown here.

The COURT. What do you refer to by the diaphragm, what some have spoken of as a baffle?

A. As a baffle, yes.

The COURT. I understand now.

A. This baffle here, No. 3. If you put a baffle of that kind in front of a fan of this type it would utterly defeat the object of the fan, because the direction of the air would be directed against the face of the diaphragm.

THE 1911 DEVICE NEVER PATENTED.

King testifies on cross-examination (R. 147):

"Mr. Townsend. Q. Did you ever apply for a patent on this structure as disclosed in this drawing?

A. I don't remember—I did not."

* * * * * * *

XQ. Did you authorize anyone to apply for a patent?

A. I did not."

* * * * * * *

XQ. The only patent you have, Mr. King, is the patent of October, 1915, which is set up by the defendant in its counterclaim: Is that not true?

A. The only patent which was taken out in my name was the patent on the device with the open cup—according to the best of my recollection."

This is the King patent of the counterclaim No. 1,158,058, of October 26th, 1915, filed March 23rd, 1914 (R. 148).

KING'S COMPANY ACTIVE DURING THE INTERIM WITH BURNERS OF ANOTHER TYPE.

On cross-examination (R. 148-149) Mr. King says:

"XQ. Now, during the interim, between March, 1914, and August, 1911, your company was actively engaged in the oil burner business, was it not?

A. It was.

XQ. You were making and selling oil burners?

A. The company was.

XQ. Yes, the company was. And they were burners first of the type you described as the water type?

A. The water method.

XQ. Such construction being illustrated in this enlargement from one of the company's catalogs: Is that correct?

A. That was the first burner.

Mr. TOWNSEND. I offer this in evidence and ask that it be marked Plaintiff's Exhibit 19.

XQ. Thereafter, you manufactured a burner of the vertical rotary type, first with a head on it such as is shown in the Becker patent which is in evidence, 1,101,779, of June 30, 1914: Is that right?

A. The company did.

XQ. And then subsequently you manufactured the burner of the type illustrated in the King patent before mentioned?

A. I did.

XQ. And these illustrations from your company's catalog, Exhibits 16 and 17, illustrate such characters of burners then put out?

A. They were being manufactured then and sold."

* * * * * * *

"XQ. As late as 1915 you were actively promoting, or rather, your company was, the sale and distribution of such vertical rotary burners of the King and Becker type?

A. The company was.

XQ. And, as a matter of fact, it was not until near the close of the Exposition, about October, 1915, that you came out with a rotary burner of the modern type and the Simplex type—the Simplex corresponding to Plaintiff's Exhibit 1?

A. I could not tell you the exact date, but I do know that a burner of this type was arranged to be produced in chronological order, and when the time came it was produced."

(R. 150-151-152):

"Q. So that in the meantime, between the appearance of this horizontal burner on the market in the fall of 1915, or at some other time which you do not remember, and August, 1911, when you say you first conceived that idea, you did practically nothing toward putting it into practice, did you?

A. What do you mean by putting it into practice—manufacturing it and selling it?

Q. Yes.

A. We did not.

Q. All you did was to make this drawing which is here in evidence and to make the model, a fragment of which is here in evidence, offered on your direct examination."

* * * * * * *

"The Court. You are limiting your question to what?

Mr. Townsend. That all that he did in putting the horizontal rotary burner into practice between August, 1911, and the fall of 1915, or at such other time, was the making of that drawing and the making of this model, a fragment of which is in evidence.

The Court. All right, limit your answer to that, witness.

A. We did not manufacture it and sell it during that period."

* * * * * * *

"Q. When did you last see this model before it was offered in evidence here today?

A. Probably five years ago.

Q. Was it in the safe then?

A. It was in the safe.

Q. And where was the drawing?

A. In my safe.

Q. And how long did it remain in your safe?

A. Until I delivered to Mr. Scott of the American Heat & Power Company.

Q. How recently?

A. I cannot answer that now, but I have Mr. Scott's receipt for it and I can give you the exact date.

The COURT. Q. Give it approximately; was it a year or two ago?

A. Probably two years ago."

REASONABLE DILIGENCE.

That King was lacking in reasonable diligence is clearly evident.

Christie v. Seybold, 55 Fed. Reporter 69, at 77:

"The question of reasonable diligence in any case depends, of course, upon all the circumstances. A complicated invention, requiring many experiments and much study to give it practical form, would reasonably delay a reduction to practice after the first conception for a greater length of time than where the idea and the machine embodying it were of a simple character. Then, too, the sickness of the inventor, *his poverty,* and his engagement in other inventions of a similar kind are all cir-

cumstances which may affect the question of reasonable diligence."

None of these excuses are even suggested here.

JULIUS H. BECKER REFUTES KING.

From Mr. Becker, Mr. King's former associate, we get a better idea of the true experimental character of the 1911 device.

He says (R. 153):

> "We first had the water method oil burner, and next we *experimented* with and tested the horizontal burner." (Italics ours.)

He identifies the drawing and model "FF". On cross-examination (R. 157) and following he discloses how crude these 1911 experiments were. The company's inaction in the matter of adopting this device speaks more eloquently than words to the unsatisfactory results of these tests or experiments.

Becker says concerning the model after it was dismantled in 1911 (R. 157):

> "It was stored on top of the office which we used as a place to keep our models."

> " * * * A conception of the mind is not an invention until represented in some physical form, and unsuccessful experiments or projects, *abandoned by the inventor, are equally destitute of that character.*"
>
> (Justice Bradley in Clark Thread Co. v. Willimantic Linen Co., 140 U. S. 481, 493; 35 L. Ed. at 525.)

And (R. 161-162):

"A. I left in the early part of 1914 and never had any more connection with the business, with the oil pumping business.

Q. But up to the early part of 1914, when you left, they had never sold any of these devices?

A. No.

Q. Where was this so-called test that you speak of conducted, the test of the model in its original form?

A. We had a yard about 50 by 150, right next to the building, and it was conducted outside in this yard. *As a furnace, I used 110 gallon oil tank, or barrel, rather.* It was fire-brick lined; one end was closed by fire-brick.

Q. In other words, you simply made a little furnace construction out there in the yard?

A. Yes.

Q. You did not put this under a boiler for working purposes, did you?

A. No, not a boiler. The furnace was built for the purpose of testing the burner.

Q. And no actual work was performed by any power generated therefrom?

A. *No, no work.*

Q. Do you know what quantity of oil you used in connection with that device?

A. I knew then; I don't know now.

Q. You don't know what size motor you employed, do you?

A. If I recollect correctly, it was a one-half horse-power motor.

Q. Did you make any tests of air velocities or economies that might be effected?

A. Do you mean efficiency tests?

Q. Yes.

A. *No, sir, we did not.*

Q. That *furnace was shortly afterwards dismantled,* too, was it, when you were through with your so-called tests?

A. The furnace was eventually dismantled; I could not tell you the time, though, I could not tell how long it remained after we were through with the tests." (Italics ours.)

From page 28 of the Annotated Statutes, Vol. 7:

"*Dismantling experimental machine as negativing reduction to practice.* The dismantling of an experimental machine by a large and prosperous company has more weight, as showing the lack of success of the trial, than it would have if done by a poor inventor whose necessities compel him to utilize the parts for other purposes. Robinson v. Thresher, 28 App. Cas. (D. C.) 22."

This, taken with the showing that the Ray invention, its conception and reduction to practice prior to the filing of the King patent, removes the latter both as a defense and as a weapon of offense.

For a very complete discussion of the whole subject of "invention and priority" between two inventors, see the opinion of Judge Colt in Automatic v. Pneumatic, 166 Fed. 289.

See also

Corrington v. Westinghouse, 178 Fed. 711, 715; C. C. A. 2nd Circuit.

"The law appears to be well established that a conception evidenced by disclosure, drawings, and even a model, confers no rights upon an inventor unless followed by some other act, such as *actual reduction to practice, or filing*

> *an application for a patent.* A conception of this character is not a complete invention under the patent laws. It may constitute an invention in a popular sense, but it does not make the inventor the 'original and first inventor' under the statutes.
>
> "If it did constitute an invention under the statutes, then an inventor might stop with *his drawings and disclosure, and hold the field for all time against a subsequent inventor who has reduced his invention* to practice, *or* who has obtained a patent. *The law will not permit this.*" (Italics ours.)
>
> Automatic v. Pneumatic, 166 Fed. 288, 298.

As to King and his associates, it may be asked: If the infringer claims to have known of the combination and to have perfected it, why did he not put it into use or apply for a patent.

As said in Loom Company v. Higgins, 105 U. S. 580; 26 L. Ed. 1177, 1183:

> "If Davis was the inventor of the wire motion applied to these looms, *why did he never apply for a patent for it?* He was already a patentee of a different and inferior apparatus. He knew all about the method of going about to get a patent. He belonged to a profession which is generally alive to the advantages of a patent right. On the hypothesis of his being the real inventor his conduct is inexplicable." (Italics ours.)

The Supreme Court in American Wood Paper Co. v. Fiber Disintegrating Co. (known as the Wood Paper patent), 23 Wall 566; 23 L. Ed. 31, said:

> "The patent of an originator of a complete and successful invention cannot be avoided by

proof of any number of incomplete and imperfect experiments made by others at an earlier date. This is true, though the experimenters may have had the idea of the invention, and may have made partially successful efforts to embody it in a practical form."

See also:

Gaylor v. Wilder, 10 How. 477; 13 Law. Ed. 504;

Barbed Wire Patent, 143 U. S. 275; 36 L. Ed. 154;

Coffin v. Ogden, 85 U. S. 120;

Cantrell v. Wallack, 117 U. S. 689;

Bell v. People's Telephone Co., 22 Fed. 309; (The Telephone Cases);

Deering v. Winona, 155 U. S. 286; 39 L. Ed. 153;

Brown v. Guild (The Corn Planter Patent), 23 Wall. 181; 23 L. Ed. 161.

In Lincoln Iron Works v. McWhirter Co., 142 Fed. 967 (C. C. A.), the Court said:

"It is not enough to defeat the patent that some one other than Gilmour had conceived the invention before he did, or had even perfected it, *so long as it had not been in public use or described in some patent or publication.* If Gilmour was an original inventor, though a subsequent one, it was his right to obtain a patent unless he 'surreptitiously and unjustly obtained the patent for that which was invented by another who was using reasonable diligence in adapting and perfecting the same'." (Italics ours.)

RAY THE FIRST INVENTOR AS AGAINST THE KING PATENT.

The King patent is not prior art because:

(1) It was not issued until nearly a year subsequent to the filing of the Ray patent and King did not file until after conception and reduction to practice by Ray:

Ray's conception 1913.
Ray's reduction to practice March 10, 1914.
Ray's filing date November 30, 1914.
King filed March 23, 1914, and issued October 26, 1915.

Defendant has offered no evidence carrying the King invention back of his filing date. He must, therefore, be restricted to that date.

On the record and as far as the proofs show Ray is the prior inventor.

This should dispose of the King patent both as to the claim of anticipation and to the charge of infringement embraced in the counter-claim.

However, the King patent is for such a different type of apparatus from the plaintiff's patent and from the defendant's infringing machine that we shall proceed to consider it on its merits or demerits.

DEFENDANT'S COUNTER-CLAIM.

Defendant in its Counter-Claim sought to set up a backfire suit on the King Patent No. 1,158,058,

dated October 26, 1915 (see Plate XV post), claiming infringement of claims 1, 2 and 3 thereof on the argument the charge of infringement was limited to claims 1 and 2 (R. 206). Issue was joined with plaintiffs on the Counter-Claim.

Plaintiffs' defenses to the Counter-Claim are:

(1) Non-infringement by reason of the fact that the defendant's devices charged to be infringed are fundamentally and absolutely different in principle, construction and mode of operation from the device shown and described in the said King Patent No. 1,158,058 of the defendant. The King burner is a vertical burner to go inside the firebox; the Ray burner is a horizontal burner disposed outside of and with only a small part projecting through the furnace front; the two burners King and Ray representing two distinct recognized classes.

To quote one witness (Whaley R. 198):

> "I might say * * * that these differences in the method of burning oil are recognized by everyone in the oil burning business, and they do not consider them comparable in any way. The vertical type of oil burner works on an entirely different principle from the horizontal type of burner."

It, furthermore, is shown that defendant immediately abandoned the King style of burner on the advent of Ray and copied Ray.

(2) Laches on the part of the defendant in that the plaintiffs' doings had been known to defendant

and its predecessors continuously from a time considerably prior to the issuance of the King patent in 1915; that on December 20th, 1915, defendant's predecessors, without just or any cause, filed suit in this Court against defendant on the said King patent but never made any effort to press said suit to trial or to determine the issues involved, but that the said suit was voluntarily dismissed against this defendant on the 26th day of May, 1919. (See defendant's Exhibit "KK"—R. 170.) That this suit was only revived as a trumped up Counter-Claim (or as the Trial Judge termed it "a counter-irritant"—R. 210) to the present suit; and after the plaintiffs, who have always maintained their innocence and had expanded their business and invested large sums of money in the development of their oil burner business, until at the time answer to the Counter-Claim was filed plaintiffs' outlay, with respect to the burner business here claimed to infringe represented an investment in excess of three hundred thousand dollars ($300,000) (R. 182).

(3) Prior invention by Ray—see supra.

JOSEPH H. KING, CENTRIFUGAL BURNERS, NO, 1,158,058, DATED OCTOBER 26, 1915, (APPLICATION FILED MARCH 23, 1914). (PLATE XV OPPOSITE.)

The first thing to note is that this patent of the defendant was copending with the first Ray patent No. 1,193,819 for a period of nearly one year. They

PLATE XV

J. H. KING.

CENTRIFUGAL BURNER.

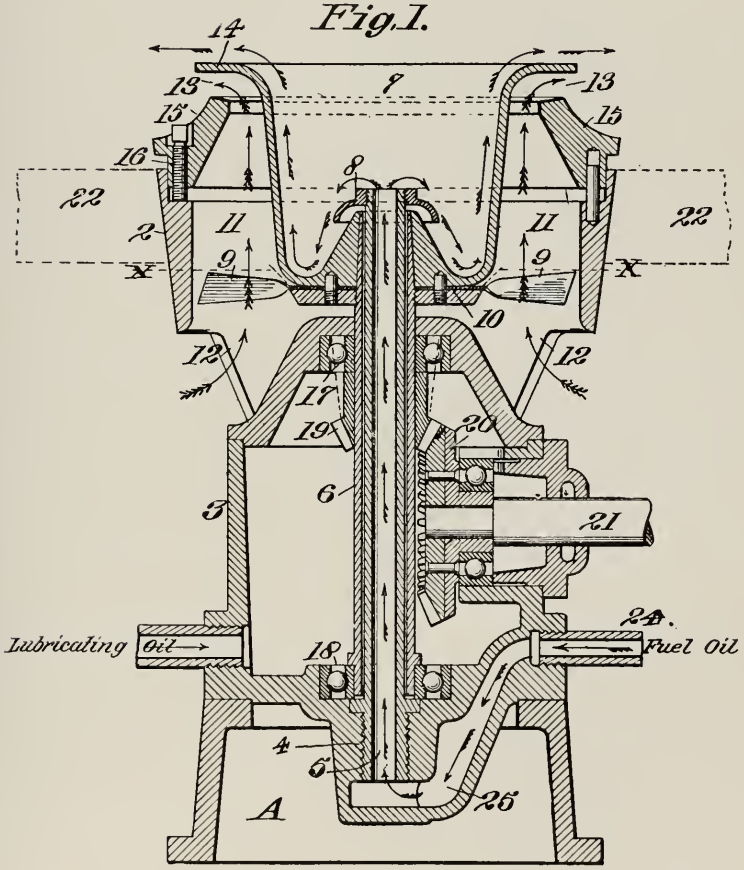
APPLICATION FILED MAR. 23, 1914.

1,158,058.

Patented Oct. 26, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

Charles Pickles

Thos. Eastberg

INVENTOR

Joseph H. King.

BY G. H. Strong

ATTORNEY

were in the same division in the Patent Office, to-wit, Division 30, Room 152, and before the same Examiner, M. R. Sullivan, and both applications were prosecuted by the same attorney. This was not only proper but was thoroughly understood by both applicants and by the Patent Office. Had it been otherwise than proper the Patent Office would have first stated there was interfering subject-matter in the two cases and the attorney would have been called upon to relinquish one of the cases.

The rules of the Patent Office on this subject provide:

Rule 93 is:

> "An interference is a proceeding instituted for the purpose of determining the question of priority of invention between two or more parties claiming substantially the same patentable invention." * * *

Rule 94 is:

> "Interferences will be declared between applications by different parties for patent or for reissue when such applications *contain claims for substantially the same invention which are allowable in the application of each party.*" * * * (Italics ours.)
>
> (Rules of Practice of the United States Patent Office.)

As a matter of fact the two inventions were of such radically different characters and operating on different mechanical and scientific principles that it would not have been possible to have found com-

mon interfering patentable matter, all this in addition to the fact that both of these machines were gleaned in an art already well developed, particularly that branch of the art of which the King patent was an exponent.

The vertical type of burner represented by King had, as previously pointed out, already reached a high state of development by Becker, King's predecessor, and particularly Fesler, another San Francisco inventor, the founder of the Fess System of Rotary Vertical Burners.

Mr. Whaley says (R. 198-9):

> "A. The J. H. King patent is a vertical type of oil burner relying for the atomization of the oil entirely upon the rotation of the atomizing cup; the lip 14 on the top of the atomizing cup diverts the stream of air away from getting across the film, and directs it in a direction the same as the discharge of the oil from the cup, and will make a saucer-like flame, and could not be used in a horizontal position and a fire made with this King device such as is made by the two burners here in question. The fan on the King burner is a propulsion type of fan, which delivers a large volume of air at low pressure, which is used for combustion only, and assists in no way in the atomizing of oil. It applies, in the first place, to the vertical type of oil burner, which is entirely different in principle."

It is to be noted that the earlier patentees of the impractical devices, such as Eddy, Mack, Klein and others, some twenty years earlier, had failed to make any impress on the industrial world although

the commercial needs were awaiting a practical rotary, horizontal burner and people were not slow to adopt the Ray type the moment it appeared. Inasmuch as commercial success is frequently a criterion of invention, so must comparative commercial success be a measure of difference or of similarity between two devices, one of which it is claimed is an infringement of the other.

Inasmuch as the King device does not appear to have met with any such complete or overwhelming success as to induce the defendant to adopt that type of burner as standard practice rather than Ray, it may be concluded that the King burner has at best been only moderately successful in a limited field of operation and that when the defendant actively sought to compete in the oil burner field it was forced to adopt the horizontal Ray type. Thus, measured by the gauge of comparative utility under equal conditions for successful operation, it is quite apparent that the horizontal, rotary burner of either the Ray or the infringing Simplex type is in a class by itself, different and distinct from the vertical, rotary burner of the King, Becker and Fesler type.

This distinction is nowhere better recognized and accepted than by the defendant itself in the article of Mr. Delaney in the recent publication "Oil Fuel." In that article, as we have seen, Mr. Delaney traces the historical development of oil burners from the straight-shot through the vertical,

rotary to the horizontal rotary, first of the fan type and later of the turbine type not here in issue.

THE KING FILE WRAPPER.

The citations against King, as shown by the file wrapper, are as follows:

> Page 266 of the U. S. Naval Liquid Fuel Board Report published at the Government Printing Office, Washington, D. C., in 1904. (See Plate XVI opposite.)
>
> Fesler, 1,064,467, June 10, 1913.

Both of these citations are of the vertical, rotary type of burner and illustrate the line of distinction between such class of burners and the horizontal type to which Ray and the later Simplex burners charged to infringe belong.

Another thing not to be overlooked in a consideration of King, in comparison with Ray and the later Simplex burners, is the emphasis laid throughout the specification of King and the File Wrapper on the peculiar *shape* of the upright atomizing cup. This cup, which is marked 7 in the drawing, has a *wide, horizontally flared lip (14)* corresponding in that portion really to a flat, horizontal disk, over which the oil spreads in a thin film solely by centrifugal action. This *spreading and thinning* of the oil in this manner is repeatedly emphasized by the patentee.

PLATE XVI

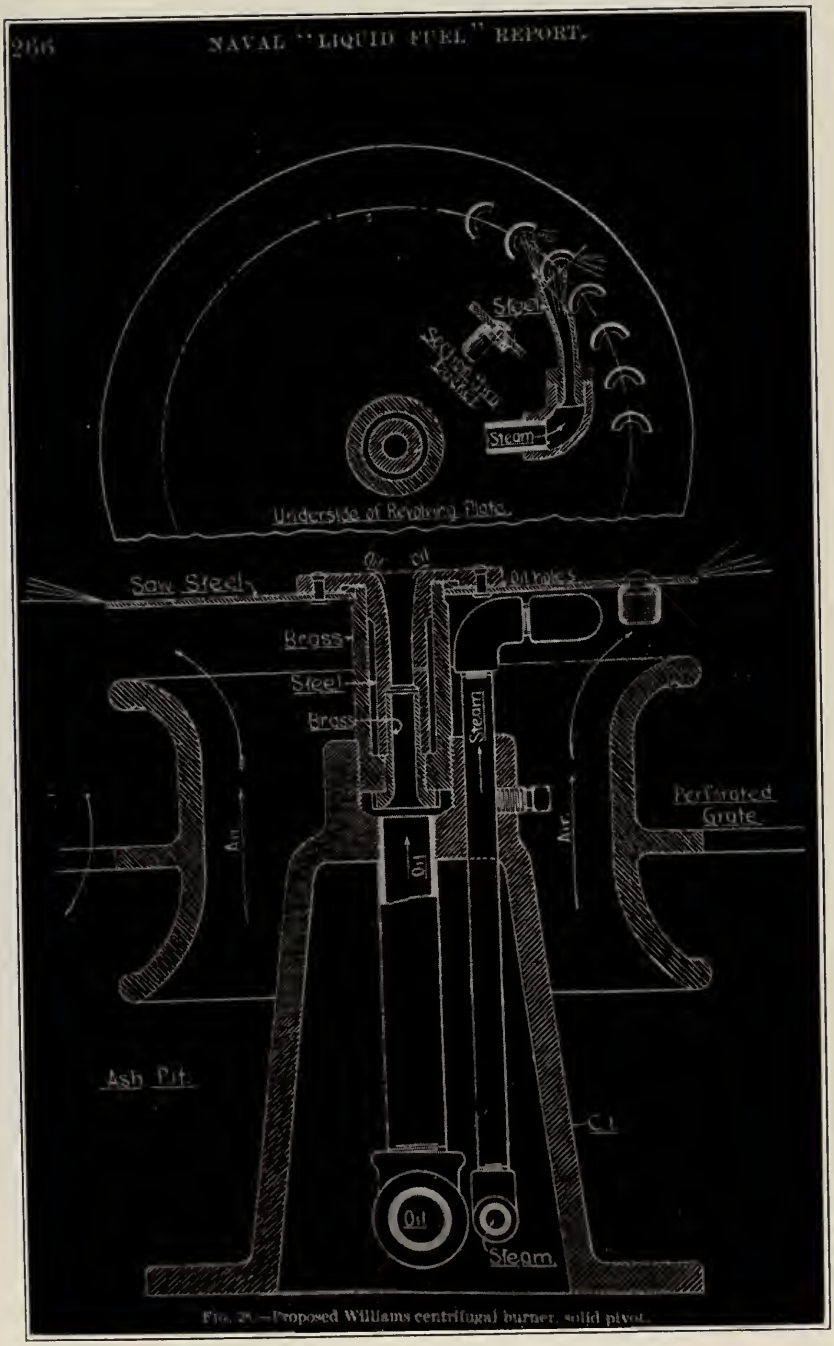


FIG. 28.—Proposed Williams centrifugal burner, solid pivot.

Referring to the operation the patentee says (page 2, beginning line 20):

> "The moment the desired speed is obtained it is next necessary to turn on the fuel oil which is admitted through pipe 24 and a duct 25 which connects with the lower end of the hollow standard. *The oil rising* through the hollow standard is then admitted to the centrifugal atomizer, being *first distributed by the stationary cap, indicated at (8).* The oil is here evenly distributed and permitted to flow into the *bottom of the atomizer* which when revolving at a *high speed causes the oil to pass rapidly up the wall* of the cup or atomizer in the form of a thin film." (Italics ours.)

Continuing (page 2, beginning line 42):

> "The constant flowing film of oil passing upwardly over the wall of the cup or atomizer acts as an insulation for the cup and prevents this from becoming overheated."

The upward action of the air current is thus referred to (page 2, beginning line 48):

> "The *upwardly flowing current of air* discharging through the annular discharge opening 13, passing over the exterior surface of the cup protects the cup from heat at this point and the cup, together with that portion of the casing which projects into the interior of the furnace will at the same time act as a heater which gives the air the desired temperature before finally entering the furnace." (Italics ours.)

Further, in speaking of the claimed advantages the patentee says (page 2, beginning line 82):

> "Experience has shown that the centrifugal action of the cup causes the *hot furnace gases to be drawn down through the center* and discharge over the periphery with the heated oil into the fire area." (Italics ours.)

Another feature distinctly absent in Ray is the "adjustable collar" of King for regulating the air (page 2, beginning line 104):

> "The adjustable collar, together with the horizontally positioned fan permits the volume and velocity of air to be regulated for various conditions and sizes of furnaces, and the velocity of air may be increased by raising the collar through means of adjusting the screw 16.

And, again, referring to a feature characteristic only of a vertical type of burner the patentee says (page 2, beginning line 127):

> "A deep cup would thus be required in a furnace only requiring a low temperature, as the *oil would be exposed a greater time period* in a *deep cup than in a shallow cup.* Similarly, where high temperature is encountered, it will only be necessary to insert a shallow cup, thus reducing the time period to which the oil is exposed before discharging into the furnace. The *adjustable collar* permits the insertion of cups of various depths and diameters without altering the sizes or dimensions of the burner otherwise." (Italics ours.)

Furthermore, in arguing for patentability over Fesler and the Naval Fuel Board's Report it is pointed out to the Patent Office in paper No. 3, dated July 28th, 1914 (filed August 4, 1914), (page 2, beginning line 3):

"First, because the construction of the two atomizers is entirely different. Applicant shows and claims a cup-shaped atomizer, while the burner shown in the Liquid Fuel Report is provided with a flat disc atomizer. The difference in construction between the cup-shaped atomizer and the disk is considerable and the final result obtained, judging from the Liquid Fuel Report, is hardly comparable."

And, again, on page 3:

"The points in favor of applicant's cup-shaped atomizer are as follows:

First, that by *retarding* the passage of the oil over the surface of the rotator or atomizer the film is thinned out, to such a degree as to assist in producing a finely atomized oil at the discharge lip * * *.

The rotating member is constructed in the shape of a deep cup with sloping sides and a *flat discharge lip* on the periphery. The cup is open at its upper end in such a manner that when installed, the surface over which the oil passes is entirely exposed to the radiant heat of the furnace. The cup is proportioned in such a manner as *to retard the oil* in its passage over the surface, until it has acquired sufficient heat to flash, immediately upon leaving the discharge lip of the cup. As a result of the thinning out of the film of oil, as it is forced up the sides of the rotating member and the constantly decreasing viscosity due to the progressive heating of the oil, the atomization at the discharge lip is extremely fine allowing the oil to be entirely consumed within an area of from two to six inches from the periphery of the rotator."

(Italics ours.)

Note in the above the emphasis laid on *retarding the oil flow*. This is the antithesis in the action of Ray and the later Simplex, because with the cup horizontal and with outwardly sloping sides the oil flow is *accelerated* toward its point of delivery.

As a result of the foregoing and other arguments the claims now in the patent were finally deemed allowable.

Defendant's appeal on the counter-claim we submit should be dismissed.

INFRINGEMENT OF FIRST RAY PATENT.

In addition to the fact that infringement is practically admitted because never denied, the proofs show as we have already pointed out herein that the defendant's infringing Simplex, Exhibit I, is really a Chinese copy of the Ray patents.

The claims sued on with respect to the first Ray patent are 3, 4, 7, 8, 9, 10, 11, 12. These claims in turn resolve themselves into two groups:

Group 1. Claims 7, 8 and 12, relating to the general burner construction, or the so-called generic claims.

Group 2. Claims 3, 4, 9, 10, and 11, the specific claims including the oil cup construction open at the rear end except for the inturned flange (13), providing a dam against back flow of oil, with the support for the cup on a solid shaft (9), by means

of a spider (12), within and between the ends of the cup (11) and the eccentric oil feed pipe (14).

Obviously, what might invalidate any one claim would not necessarily adversely affect any other.

And in the same section (Walker Sec. 177) that author says:

> "In contemplation of law each claim of a patent is considered as setting forth a complete and independent invention."

See also:

Jones v. Sykes, 254 Fed. 91, 96;
Lamson v. Hillman, 123 Fed. 416;
United Nickel Co. v. California Co., 25 Fed. 475;
Anderson v. Potts, 108 Fed. 379 (7th C. C. A.).

CLAIMS SUED ON.

The references denote the characters on the drawings of Ray patent No. 1,193,819.

General Claims of Group 1.

Claim 7:

A centrifugal oil burner comprising in combination:

(1) A motor (10) and
(2) a motor shaft (9),
(3) upon which is mounted a fan (5)
  (a) of relatively large diameter with respect to its width;

(4) a fan casing (2);

(5) said casing (2) having a nozzle (7) in axial line with,

(a) and surrounding and spaced from said shaft (9);

(b) said casing (2) having

(6) a diaphragm (3)

(a) between the fan (5) and nozzle (7)

(b) around which (diaphragm 3) the air travels

(c) in a relatively thin sheet to the nozzle (7),

(7) an oil distributing cup (11)

(a) on the end of the shaft (9) within said nozzle (7);

(8) means (pipe 14) to deliver oil to the cup (11);

(9) the air passing through the nozzle (7) having a thin cylindrical discharge substantially coaxial with the oil cup (11) and intercepting the centrifugally discharging oil from the cup (11), substantially as described.

Claim 8:

In an oil burner:

(1) A gradually tapering air nozzle (7);

(2) a gradually flaring cup (11)

(3) arranged within the nozzle (7)

(4) and extending a distance therein to form with the nozzle (7) a comparatively long annular air passage which gradually de-

creases in area toward the contracted end of the nozzle (3),

(5) the latter (nozzle 3) closely surrounding the cup
  (a) whereby a thin sheet of air will issue from the annular passage provided;

(6) oil supply means (pipe 14) for the cup (11),

(7) and air supply means
  (a) comprising a casing (2) supporting the nozzle (7),
  (b) and a blower (5) of large diameter arranged within the casing (2)
  (c) and provided with narrow blades of small area
  (d) *whereby a small volume of air under high pressure is obtainable.*

Claim 12:

The combination in an oil burner:

(1) Of an open mouth cup (11)
  (a) having unperforated side walls,

(2) and an oil supply (pipe 14) through the bottom (of cup 11);

(3) a circular casing (2) having
  (a) a nozzle (7) extending from one side, axial with and inclosing the cup, and forming therewith a long narrow convergent channel;

(4) an air blower (5) within the casing (2) with narrow blades of small area,

(5) and a shaft (9) upon which both cup (11) and blower (5) are fixed to rotate in unison,
(a) *said blower (5) having a diameter which will discharge air under a sufficient pressure to divert the centrifugally discharged oil into the line of travel of the air.*

Claims of Group 2.

(On specific form of oil cup and oil delivery.)

Claim 3:

An oil burner comprising:

(1) A casing (2) having a restricted tubular discharge nozzle (7);
(2) a rotatable blower (5) mounted in the casing (2) for impelling air through the nozzle (7);
(3) an oil spraying nozzle (11) comprising a cup (11);
(a) having a perforated bottom (12) carrying a stem (9) secured to the blower (5) for rotation therewith,
(b) and rearwardly extending flanges (13) overhanging the stem,
(4) and a pipe (14) for delivering oil into the flange (13) and through the perforated cup bottom (12) for deliverance in a centrifugal manner into the surrounding air jet.

Claim 4:

In an oil burning apparatus:

(1) A casing having a nozzle (7);

(2) an oil spraying cup (11) rotatable within the nozzle (7), and provided with

(3) a plurality of perforations (12) in its bottom only;

(4) means (motor 11) for rotating the cup (11) and supplying air for the nozzle,

(5) and means (oil pipe 14) for supplying oil for passage through the perforations (12) of the cup and discharge from the latter.

Claim 9:

In an oil burner:

(1) An air nozzle (7);

(2) an oil spraying nozzle (11) rotatable in the air nozzle (7), and comprising

(a) a cup (11) having a rearwardly extending flange (13),

(3) and means (oil pipe 14) for supplying oil to the flange for delivery to the cup.

Claim 10:

In an oil burner:

(1) An air nozzle (7);

(2) oil spraying means (cup 11) rotatable therein, and comprising

(a) a cup (11) having

(b) a rearwardly extending flange (13) communicating with the cup,

(3) and a delivery pipe (14) having its delivery end deflected and extending into the flange (13) of the cup for supplying oil thereto.

Claim 11:

In an oil burner:

(1) An air nozzle (7);

(2) oil spraying means (11) rotatable therein, and comprising

(a) a cup (11), having a rearwardly extending flange (13) communicating with the cup;

(3) said flange (13) being angular in cross section,

(4) and on oil pipe (14) terminating within the flange (13) for delivering oil therein.

INFRINGEMENT OF SECOND RAY PATENT.

Claims 15 and 1, 2 and 3 relate particularly to the combination of the burner with the furnace plate 3, whilst claims 14, 16, 17, 18, 19 and 20 and 4, 5 and 6 relate to the oil connections through the hinges.

For convenience we will quote but a few of the claims relied on as illustrative of the two groups:

Group 1.

The combination with the air jacketing furnace plate 3.

Claim 1:

In an oil burning apparatus, the combination of

(1) a furnace plate (3) adapted to be attached to a furnace front,

(a) and carrying a tubular extension (4) adapted to project through an opening in the furnace wall to form a metallic lining therefor,

(2) and a fan blower casing (B) hinged to the plate (3);

(3) said fan blower casing (B) carrying an oil distributing cup (14) which projects through the said tubular projection (4) to discharge into the furnace when the fan blower casing is closed over the plate.

Claim 15:

In an oil burning apparatus, the combination with

(1) a furnace plate (3) adapted to be attached to a furnace front (A), and having

(2) an inwardly tapering extension (4) registering with the furnace opening (2);

(3) of a casing (B), hingedly mounted on the furnace plate (3), adapted to be swung to and away from the furnace front opening (2);

(4) a motor driven centrifugal oil burner (motor 11, oil cup 14, nozzle 17, etc.) mounted on the hinged casing (B) and operatively disposed within the smaller and inner end of the plate extension (4),

(5) and connections, oil pipes 27, 25, 28, 29, 21, etc.) for delivering fuel oil to the burner (14).

Group 21 for the Oil Supply and Oil Excess Return Through the Hinges.

Claim 17:

The combination with a furnace (A) having an opening (2) formed therein:

(1) A pair of hinge lugs (5, 9-5, 9) on the furnace;

(2) an oil burner (cup 14),

(3) and means (oil connection) for supplying oil to the burner pivotally connecting the latter to the hinge lugs;

(4) said means comprising an oil-supplying conduit (pipes 27, 25) passing through one hinge lug (lower one) and a returned conduit (pipes 24, 33) passing through the other hinge lug (upper one),

(5) and connected to the first conduit between the hinge lugs (by means of the double tee 26).

Claim 18:

The combination with a furnace (A) having an opening (2) formed therein:

NOTE: Claims 14-16, primarily relating to the delivery of oil to the burner through the hinges, omits the return feature of surplus oil by specific reference, but that *both* hinges shall provide oil passages.

Claim 15 is broader in that it has the mounting of the burner on the furnace plate, with the conical extension 4 in combination without re- particular means for In other delivering oil to the burner. words, in claim 15 the oil is not necessarily restricted to admission through the burner hinges.

(1) A pair of hinge lugs (5, 9-5, 9) on the furnace;

(2) an oil burner (cup 14);

(3) of means for supplying oil to the burner pivotally connecting the latter to the hinge lugs;

(4) said means comprising an oil-supplying conduit (hollow pintle 25) passing through one hinge lug (the lower one), and

(5) a return conduit (pintle 24) passing through the other hinge lug (the upper one),

(6) and a pump (23) arranged in the supply conduit for forcing the oil through the *conduits* (plural) and to the burner.

Claim 19:

The combination of a furnace (A) having an opening (2) formed therein:

(1) A pair of hinge lugs (5, 9-5, 9) on the furnace;

(2) an oil burner (cup 14);

(3) means for supplying oil to the burner pivotally connecting the latter to the hinge lugs;

(4) said means comprising an oil-supplying conduit (pintle 25) passing through one hinge lug (the lower one), and

(5) a return conduit (pintle 24) passing through the other hinge lug (the upper one),

(6) and a double T-connection (26) arranged between the hinge lugs and having separate passages connected to the respective conduits.

Claim 20:

The combination with a furnace (A) having an opening formed therein:

(1) A pair of hinge lugs (5, 9-5, 9) on the furnace;

(2) an oil burner (14);

(3) means for supplying oil to the burner pivotally connecting the latter to the hinge lugs;

(4) said means comprising an oil-supplying conduit (pintle 25) passing through one hinge lug,

(5) and a return conduit (pintle 24) passing through the other hinge lug;

(6) a motor (11);

(7) a fan (13) driven by the motor (11) for delivering air to the burner;

(8) and a pump (23) arranged in the conduits and driven by the motor.

Without extended analysis it is sufficient to say that the other claims specified as infringed are directed to further details, which details have been so closely copied by the defendant in its rotary fan type of burner (Exhibit 1), that infringement of all the claims of both patents necessarily follow if the Court finds the patents valid, as we submit it must.

Conclusion.

It is anticipated that the defendant will argue, as it did before the Trial Court, to show that in some manner or other not at all clear, the first Ray patent adversely affects the second Ray patent. We refer to the matter so as to avoid the necessity of applying to the Court for leave to file a reply brief. The burden of defendant's contention was thus summarized in the argument on final hearing where counsel for the defendant stated (Transcript of argument, page 165):

> "If Ray made any invention in this case by going through the prior patents and selecting from one one particular oil cup and from another one particular fan, etc., then we, under this assumption, must have made an invention *when we took the oil cup from the first patent and substituted it for the oil cup in the second patent in combination with other features in that second patent.* That is precisely what Ray did in getting together his combination of elements. It is obviously absurd for anyone to contend that there could have been any invention with these two Ray patents before them in selecting from one the oil cup and substituting it for the oil cup of the other."

Aside from the admission of appropriation of the Ray inventions, the fallacy otherwise of this reasoning must be apparent, and we merely want to point out to the Court the fact that the two Ray patents are to be construed in the light of the rules governing copending applications of the same inventor.

The date of invention and application and not the date of patent is the controlling date in determining as to the legal effect to be given to two patents issued at different dates to the same inventor in which are shown certain features common to both.

Suffolk County Mfg. Co. v. Hayden, 70 U. S. 3 Wall. 315 (18:76);

McMillan v. Reese, 1 Fed. 722.

In short, neither patent is to be considered as a part of the prior art with respect to the other.

That this is not an open question, see the following cases:

Ide v. Trorlicht & Co., 115 Fed. 137, 145 (C. C. A.)

"Where each of several applications, which subsequently ripen into patents to the same inventor, describes an entire machine and the inventions claimed in all of the applications, but no one of the applications claims any invention claimed in any of the others, and they are all pending at the same time, the respective dates of the applications and of the patents and the dates when the applications were filed are immaterial, and the applications and the patents cannot be used to anticipate each other. Walk. Pat. Sec. 180; Westinghouse Electric & Mfg. Co. v. Dayton Fan & Motor Co. (C. C.) 106 Fed. 724, 726; Suffolk Manufacturing Co. v. Hayden, 3 Wall. 315, 318, 18 L. Ed. 76; Graham v. McCormick (C. C.) 11 Fed. 859."

See also:

Anderson v. Collins, 122 Fed. 451, 458;

Victor Talking Co. v. American Graph. Co., 140 Fed. 860; affirmed 145 Fed. 350;

Welsbach Light Co. v. Cohn, 181 Fed. 122, 126;

Cleveland Foundry Co. v. Detroit Co., 131 Fed. 853, 858 (C. C. A.);

Kinnear Mfg. Co. v. Wilson, 142 Fed. 970 (C. C. A.).

The rule would hold even if the dates of the patents were reversed and the broader patents had issued last; for, as said in Cleveland Foundry Co. v. Detroit Vapor Stove Co., 131 Fed. 853, 858 (C. C. A.):

> "As was explained in the Dayton Fan & Motor Co. case, when the patent first granted is distinctly and only for an improvement, on another invention which is already the subject of a prior application then pending, and on which a later patent is granted, the patent for the improvement in no wise interferes with the other application or the patent issued thereon, for the reason that the patents are for separate and distinct inventions. In just such a case as this we held that the later patent, being one for the generic invention, was not invalidated by reason of the issue of a previous patent in which improvements upon the other only had been patented. We had already so held in Thomson-Houston Electric Co. v. Ohio Brass Co., supra. It is true that in the applications for these patents for improvements there was no express disclaimer or renunciation of the matter of the former application. But that was unnecessary. That application was pending and being prosecuted in the Patent Office, and the fact that the application for the improvement patents did not intend to release his former invention to the public was as well understood as if he had in express terms said so. In order to explain

> the basis of the improvement patents, it was necessary to state what the improvement was upon, and how it fitted it. Having done this, he claimed what was new, and thereby distinguished what his patent was intended to include."

See also the opinion of then Judge Taft in Thomson-Houston Electric Co. v. Ohio Brass Co., 80 Fed. 712 (C. C. A.).

We further anticipate that the defendant will urge upon this Court that all Ray did, anyway, was to exercise the mechanic's prerogative of selection of desired parts from the prior art within the skill of the calling without invention. But to this there are several answers. To those already given we would but add that Ray did a great deal more than merely select individual elements here and there. Some of these elements and some of the results did not exist, in fact, at all in the oil burner art.

1. The straight-shot horizontal flame by a rotary burner was new with Ray.

2. A large diameter narrow blade fan was entirely new in oil burners. (A *suction* cleaner can scarcely be held applicable where the mere chance existence of a similar fan would in no wise suggest its adaptation to the *blower* effects desired in a rotary oil burner.)

3. The diaphragm of Ray as already pointed out was not only recognized by the Trial Court as being

something new, but its desirability, from whatever cause, is recognized by the fact that the defendant uses it.

As we have seen, the diaphragm appears to do several things:

(a) It relieves the friction load which would be caused by the air pressure acting against the end face of the fan, so that the motor may be driven with much less power.

(b) It prevents objectionable disturbance of the air, due to the frictional contact with the moving surface of the fan disk.

(c) It provides a flat circular passageway of large area at the point where air is delivered thereto, and uniformly contracts the passageway while delivering air to the nozzle, thus insuring that the air velocity will be increased, or at least not diminished in transit, and that an undisturbed envelop of air will be projected from the nozzle and around the cup.

(d) By means of the diaphragm a circulation of air through the housing and the fan may be brought about, where the elimination of the diaphragm would cause the air to bank around the circumferential edge of the fan, and tend to greatly impede the flow of air from the inlet opening to the nozzle.

Other points of novelty in Ray embrace:

(4) The hinged air nozzle acting as a furnace plate and air jacket for the oil cup.

(5) The Ray burner as a compact unit embodying the features of accessibility, simplicity, oil supply and return through the hinge; the double T and all; absolutely copied in detail by the defendant.

Aside from any technical rules of patent law relative to aggregation or combination, we stand squarely on the record that Ray was the first in the art to produce a horizontal, "straight-shot" character of flame in a motor-driven atomizer that would serve the demands of the trade.

We challenge the defendant to produce any prior patent or publication that would in itself accomplish the results of the Ray patents.

Undeniably, there are patents which show here and there some of the separate elements that Mr. Ray saw fit to adopt, but why did he adopt certain features here and there and to those add others that led to ultimate success? Because he some way possessed that intuitive faculty of the mind that belongs to the real discoverer of new things.

That his competitor the defendant and its predecessors, took it up afterwards is eloquent of Ray's originality and ingenuity. If the prior art was so fertile and suggestive of the Ray invention, why did defendant, who had been in business many years prior to the Ray invention, delay introducing an article that according to the Trial Court's opinion (R. 208) is "useful and superior" and in "extensive use", until Ray blazed the trail.

Mr. Ray is a true inventor, in the accepted sense of the word, and to deny him credit for the efforts and expense put forth over a long period of years in developing this invention, is contrary to the spirit of the patent law.

This Court has much less frequently found invalidity than non-infringement in patent cases. This is as it should be. Under the American system of patent granting, skilled Examiners of considerable scientific training scrutinize every application for patent, and they are competent to decide what does and what does not involve invention. Once the Commissioner of Patents issues a patent, the Court assumes that it represents something more than the enterprise of a manufacturer or salesman. That is the reason for the presumption of novelty attaching on the issuance of the patent. Oftentimes the owner of a patent may think it covers more than it really does, and it is distinctly the province of the Court to construe the patent and place the proper interpretation upon it.

In addition to the strong showing of positive novelty and utility in the Ray patents, it is interesting to note some of the *unusual* presumptions attending their validity:

(a) The added presumption of validity shown by the careful consideration given the Ray patents by the Patent Office Experts. (United Co. v. Beattie, 138 Fed. 136.)

(b) The added presumption resulting from the excessive number of so-called "prior art" patents urged upon the Court by way of anticipation, when viewed particularly in the light (or shadow) of the refusal of defendant's expert to designate any one as a "best reference". (Forsyth v. Garlock, supra, and other cases.)

(c) The added presumption due to the fact that the defendant's device is closer to plaintiffs' patents than to anything in the so-called prior art.

> "It gives the tribute of its praise to the prior art; it gives the Grant Tire the tribute of its imitation as others have done." (Diamond Tire Case, 220 U. S. 428.)

(d) "A patent is prima facie evidence of utility, and doubts relevant to the question should be resolved against infringers, because it is improbable that men will render themselves liable to actions for infringement, unless infringement is useful. In fact if the defendant has adopted the distinctive features of a patented device he is estopped to deny its utility." (Walker on Patents, Section 85, page 103.)

(e) The added presumption of validity—really more than a presumption for the Courts frequently accept it as corroborative proof—that defendant has appropriated the plaintiffs' patented inventions as the foundation of its own business and, moreover, has met with success as a result thereof. (Milner Co. v. Yesbera, 133 Fed. 916; Dowagiac Co. v. Superior, 115 Fed. 88.)

The defendant, although free to adopt any or all of the ancient devices, nevertheless when it came to build its machine and to construct horizontal rotary oil burners which would operate for commercial, practical purposes, more nearly copied the patented device of the plaintiff than anything else in the prior art. This of itself is strong evidence of invention.

The National Hollow B. B. Co. v. Interchangeable B. B. Co., 106 Fed. 699;
Dowagiac Mfg. Co. v. Minnesota Moline Plow Co., 118 Fed. 136, C. C. A.

(f) The added presumption that the Ray burner and the infringing Simplex have both met with popularity and commercial success and supplanted the former vertical rotary burner.

Extensive use where not due merely to advertising, and the fact that defendants themselves abandoned a previously used device and adopted the patented one, constitutes evidence of invention. (Peters v. Union Biscuit Co., 120 Fed. 679 (Mo.).)

Further, we have only to remind this Honorable Court that no fine distinctions of infringement or non-infringement present themselves here as so often do in patent cases. (We are not speaking now of the alleged counter-claim on the King patent because we believe that the charge is not only without merit from any angle but that aside from the priorities and equities in favor of Ray and King claims are not infringed and never were infringed

and the defendant's predecessors knew it when they dismissed their former suit.)

However, as to the Ray patents, it has never been denied that defendant infringed. Defendant's sole defense and hope has been the destruction of the Ray patents.

But it has ever been the policy of our Courts to effectuate the policy laid down in the Constitution, that patents are granted in order to "promote the progress of science and useful arts".

To that end the Courts have tended strongly to the exercise of a broad and liberal view rather than a technical one, where the result may be to destroy or paralyze a patent for a recognizedly meritorious invention.

While it is true that no absolute yardstick has been devised for measuring an invention, yet it is accepted doctrine that

> "all doubts should be resolved in favor of patentees, and every shred of inventive progress should be protected." (Universal Arch Co. v. American Arch Co., 290 Fed. 653.)

One has but to read the opinions of the Supreme Court in the Barbed Wire case, 143 U. S. 283, the Rubber Tire case, 220 U. S. 428, and many others, to appreciate that the law does not require that an inventor shall indulge in witchcraft and create something that never before existed in any form.

It is sufficient if he combines old and well-known elements in such a way as to bring about better

results. In the case of Loom Company v. Higgins, 105 U. S. 591, Justice Bradley said:

> "It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result never attained before, it is evidence of invention."

Therefore, when the Hon. Trial Judge (R. 208) concedes the fact that plaintiffs' burner is

> "a compact, useful, and superior machine or instrumentality to supply fuel oil to fire boxes, and of extensive use"

he is crediting Ray with accomplishing the very things which the law recognizes as constituting invention, and it was clearly error for the Court to conclude that these desirable accomplishments are nothing more than the ordinary and anticipated advance in the art by reason of mechanical skill and the enterprise of the manufacturer and salesman.

These observations are submitted in view of the fact that the defendant found it necessary to offer in evidence some twenty-seven patents to show, not in combination but separately, some—*not all*—of the features which Ray has so ingeniously combined in what the Trial Judge states is a "compact, useful, and superior machine of extensive use". Is not the world looking for compact, useful and superior machines to promote the progress of science?

The prior utterances of this Court, as well as of the Supreme Court, repeatedly pronounce such achievement as invention. The Supreme Court in two rather recent cases emphasizes this principle:

One coming up from this Circuit, in which Chief Justice Taft held that the Dickinson patent for a candy-pulling machine (since it effected a saving in the manufacture of candy and places the business on a more sanitary plane, even in spite of the crudeness and imperfections of the first machine) was a pioneer invention, and the patent was entitled to a broad range of equivalents. (Hildreth v. Mastores, 257 U. S. 27.)

The other case is that of Eibel Process Company v. Minnesota and Ontario Paper Company, 261 U. S. 45, in which Chief Justice Taft said, concerning the patent in suit:

> "In administering the patent law the court first looks into the art to find what the real merit of the alleged discovery or invention is and whether it has advanced the art substantially. If it has done so, then the court is liberal in its construction of the patent to secure to the inventor the reward he deserves. If what he has done works only a slight step forward and that which he says is a discovery is on the border line between mere mechanical change and real invention, then his patent, if sustained, will be given a narrow scope and infringement will be found only in approximate copies of the new device. It is this differing attitude of the courts toward genuine discoveries and slight improvements that reconciles the sometimes apparently conflicting instances

of construing specifications and the finding of equivalents in alleged infringements. In the case before us, for the reasons we have already reviewed, we think that Eibel made a very useful discovery which has substantially advanced the art."

"His was not a pioneer invention creating a new art; but a patent which is only an improvement on an old machine may be very meritorious and entitled to liberal treatment. Indeed, when one notes the crude working of machines of famous pioneer inventions and discoveries, and compares them with the modern machines and processes exemplifying the principle of pioneer discovery, one hesitates in the division of credit between the original inventor and the improvers; and certainly finds no reason to withhold from the really meritorious improver the application of the rule 'ut res magis valeat quam pereat', which has been sustained in so many cases in this court."

In the leading case of Turrill v. Railroad Co., 1 Wall. 291, Mr. Justice Clifford, speaking for the Supreme Court, said:

"Patents for inventions are not to be treated as mere monopolies, and, therefore, odious in the eyes of the law; but they are to receive a liberal construction, and under the fair application of the rule, *ut res magis valeat quam pereat,* are, if practicable, to be so interpreted as to uphold and not to destroy the right of the inventor."

In the case of Hogg v. Emerson, 6 How. 485, the same Court said:

"We cannot consent to be over astute in sustaining objections to patents. * * *

> "The true rule of construction in respect to patents and specifications and the doings generally of inventors, is to apply to them plain, ordinary principles, as we have endeavored to on this occasion, and not in this most metaphysical branch of modern law to yield to subtleties and technicalities unsuited to the subject and not in keeping with the liberal spirit of the age, and likely to prove ruinous to a class of the community so inconsiderate and unskilled in business as men of genius and inventors usually are."

Under all the circumstances here the rule of construction laid down in Hogg v. Emerson, Turrill v. R. R. Co., Rubber Co. v. Goodyear Co., 9 Wall. 788, and so recently affirmed in the Eibel Process case supra, applies with stringent force.

We respectfully submit that the decree, insofar as concerns the Ray patents, should be reversed and said patents, and each of them, held valid and infringed, with an award of costs in favor of plaintiffs and that defendant's appeal and cross-bill be dismissed.

Dated, San Francisco,
October 15, 1924.

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